Five-Year Review Report

Fourth Five-Year Review Report
for
Davie Landfill
EPA ID FLD980602288

Davie
Broward County, Florida

March 2011

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For:
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Date: 3/16/11

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SW 142nd Avenue
Davie
Broward County, Florida

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CD	Consent Decree
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FYR	Five-Year Review
GPD/FT	Gallons per Day per Foot
ICs	Institutional Controls
MCL	Maximum Contaminant Level
µg/L	Micrograms per Liter
MNA	Monitored Natural Attenuation
MW	Monitoring Well
NCP	National Contingency Plan
NGVD	National Geodetic Vertical Datum
NPL	National Priorities List
O&M	Operation and Maintenance
OU1	Operable Unit One
OU2	Operable Unit Two
PCOR	Preliminary Closeout Report
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation / Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
TBCs	To-Be-Considered Criteria
SFWMD	South Florida Water Management District
UAO	Unilateral Administrative Order
VOC	Volatile Organic Compound

Executive Summary

Introduction

The 209-acre Davie Landfill site (the Site), also known previously as the Broward County Sanitary Landfill, began operation in 1964 as a garbage incinerator and trash landfill operated by Broward County in Davie, Florida. Ash from the incinerator, construction debris and demolition debris were placed in the trash landfill. Although the trash landfill remained active, the incinerator was closed in 1975, and a sanitary landfill was constructed on the Site for disposal of municipal solid waste, construction debris, tires and other waste materials. A basin area at the landfill was also used as a sludge lagoon for disposal of grease trap pump out material, septic tank sludge and treated municipal sludge from 1971 until 1981. The sludge lagoon was closed in 1981 because of ground water contamination concerns. Both the sanitary landfill and the trash landfill were closed in December 1987.

Ground water monitoring began at the Site in 1976, when a contaminated plume in the area of the Site was identified. Sludge lagoon contents were first sampled in 1982. The United States Environmental Protection Agency (EPA) listed the Site on the National Priorities List (NPL) on September 8, 1983. Primary contaminants found in site soils, sludge and ground water were inorganic chemicals, heavy metals and volatile organic compounds (VOCs). Vinyl chloride and antimony were the primary ground water contaminants of concern. The cleanup plan for the Site covered two operable units (OUs): OU1 (source control of contamination from the sludge lagoon) and OU2 (identification of any additional hot spots at the Site and remediation of ground water, as necessary).

Major remedy components for OU1 were completed in 1989. Remedial action to address OU2 was completed in 1995. The Site was also officially closed in 1995 pursuant to Resource Conservation and Recovery Act (RCRA) landfill closure regulations as administered through the State of Florida's Landfill Closure Program. In 2003, EPA determined that cleanup standards for ground water had been achieved. The Site was deleted from the NPL on August 21, 2006. Monitoring is ongoing, as required by a Solid Waste Resource Recovery and Management Facility post-closure monitoring permit issued officially by the State of Florida for the Broward County Landfill Facility. Aside from cleanup activities, the Site was not in use between 1987 and 2003. In 2003, most of the Site was returned to use as Vista View Park, a Broward County regional park. The park opened to the public on July 12, 2003 and is operated by Broward County's Parks and Recreation Division. Additional land to the south and west of the Site was acquired in 2002 and developed as additional recreational park space for Vista View Park. This new addition opened to the public in 2009. The triggering action for this Five-Year Review (FYR) was the signing of the previous FYR on December 21, 2005.

Remedial Action Objectives

The remedial action objective (RAO) of the Site's 1985 Record of Decision (ROD) for OU1 is to prevent potable water from exceeding the applicable drinking water standards or the cancer risk level of 1×10^{-6}. The RAO of the Site's 1994 ROD for OU2 is to provide for the remediation of potential ground water threats to the environment. Remedy performance standards as specified in

the ROD were based on achieving specific maximum concentration levels for antimony and vinyl chloride.

The ROD for OU1 was issued in 1985. Major remedy components included:

- Excavation, dewatering and stabilization of the sludge lagoon contents.
- Disposal of sludge lagoon source materials in the single-lined sanitary landfill cell 14.
- Placement of a cap over landfill cell 14.

The ROD for OU2 was issued in 1994. Major remedy components included:

- Natural attenuation of vinyl chloride and antimony.
- Ground water monitoring to confirm natural attenuation.
- Monitoring of residential wells to determine the impact upon such private wells.
- Public water supply connections for residents that have been affected by contamination in excess of performance standards.

Technical Assessment

The assessment of the Site for this FYR is based on a review of site documents, monitoring data, Applicable or Relevant and Appropriate Requirements (ARARs), risk assumptions and a site inspection, all of which indicate that the selected remedy is functioning as intended by the 1985 ROD for OU1 and the 1994 ROD for OU2. The OU1 selected remedy is protective of human health and the environment because exposure pathways that could result in unacceptable risks have been addressed. The excavation, stabilization and placement of sludge lagoon contents under a capped cell in the nearby landfill closed in accordance with RCRA landfill closure regulations has eliminated the potential for sludge lagoon contents to contribute to ground water contamination. Prior to excavation, EPA sampled and tested the sludge material and determined it to be non-hazardous. Follow-up sampling prior to excavation confirmed EPA's initial findings. All sludge material was removed; an additional three feet of the sludge lagoon foundation was also removed. Following remediation, the former sludge lagoon was redeveloped into a nature pond as part of a county park. The nature pond is heavily vegetated and is located near the park's center.

The OU2 selected remedy is currently protective of human health and the environment because exposure pathways that could result in unacceptable risks have been addressed. Ground water cleanup goals were achieved and monitored for one additional year as required by the ROD. Monitoring data collected between September 2005 and October 2010 revealed no detectable levels of antimony concentrations above the cleanup goal. Monitoring data collected during this time revealed no detectable levels of vinyl chloride above the cleanup goal in 20 of the 22 ground water monitoring wells. Two wells (MW11-57 and MW11-100) included as part of a four-well cluster located on the southern site boundary have exceeded the ground water cleanup goal for vinyl chloride. These exceedances are sporadic and minimal in concentration and show no clear trend that contaminant concentrations will remain above the Safe Drinking Water Act Maximum Contaminant Level (MCL). During the past year, only MW11-100 exceeded the ground water cleanup goal of 1 microgram per liter (µg/L) for vinyl chloride with a

concentration of 1.28 µg/L detected in April 2010. These two wells are located on a portion of the Site that is operated as a county park. Residences located in the area near the Site are connected to public water supplies.

Conclusion

The remedy for OU1 at the Site currently protects human health and the environment because the excavation and disposal of sludge lagoon contents contaminated with lead, chromium, cadmium, arsenic and mercury has eliminated any source material that may have been contributing to ground water contamination. The materials excavated from the sludge lagoon were determined to be non-hazardous, were stabilized and were disposed of in the nearby landfill which was subsequently closed and is monitored pursuant to a RCRA landfill closure permit. The former lagoon area, which was the focus of the OU1 action under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), supports unrestricted use.

The OU2 selected remedy is currently protective of human health and the environment because exposure pathways that could result in unacceptable risks have been addressed. The OU2 ROD stated: *Monitoring will continue for at least one year after the concentrations in all monitoring wells decrease below the performance standards*. This requirement was met for seven sampling events between September 2000 and September 2003 and the site was deleted from the NPL in 2006. Ground water monitoring data from the past five years have shown slight exceedances of the vinyl chloride cleanup goal. Because ground water vinyl chloride concentrations are very close to the cleanup goal and in order to eliminate duplicative and unnecessary monitoring and oversight requirements, EPA will monitor ground water concentrations during the upcoming five-year period and if vinyl chloride concentrations decrease to below the cleanup goal for one year, EPA will discontinue conducting FYRs. Davie Landfill will continue to be subject to the RCRA requirements, including ground water monitoring, as discussed in the post-closure monitoring permit issued to Broward County by the Florida Department of Environmental Protection (FDEP) found in Appendix F.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Davie Landfill		
EPA ID *(from WasteLAN)*: FLD980602288		
Region: 04	**State:** FL	**City/County:** Davie/Broward

SITE STATUS	
NPL status: ☐ Final ☒ Deleted ☐ Other (specify)	
Remediation status (choose all that apply): ☐ Under Construction ☐ Operating ☒ Complete	
Multiple OUs?* ☒ YES ☐ NO	**Construction completion date:** 11/08/1995
Has site been put into reuse? ☒ YES ☐ NO	

REVIEW STATUS	
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency	
Author name: **Treat Suomi and Eric Marsh (Reviewed by EPA)**	
Author title: Senior Associate and Associate	**Author affiliation: E^2 Inc.**
Review period**: 06/03/2010 to 01/28/2011	
Date(s) of site inspection: 06/25/2010	

Type of review:

☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion

Review number: ☐ 1 (first) ☐ 2 (second) ☐ 3 (third) ☒ Other (specify) Fourth

Triggering action:

☐ Actual RA Onsite Construction at OU# ☐ Actual RA Start at OU#
☐ Construction Completion ☒ Previous Five-Year Review Report
☐ Other (specify)

Triggering action date *(from WasteLAN)*: 12/21/2005

Due date *(five years after triggering action date)*: 12/21/2010

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form continued

Issue(s):
None

Recommendation(s):
None

Protectiveness Statement(s):
The remedy for OU1 at the Site currently protects human health and the environment because the excavation and disposal of sludge lagoon contents contaminated with lead, chromium, cadmium, arsenic and mercury has eliminated any source material that may have been contributing to ground water contamination.

The OU2 selected remedy is currently protective of human health and the environment because exposure pathways that could result in unacceptable risks have been addressed and natural attenuation is occurring. The OU2 ROD stated: *Monitoring will continue for at least one year after the concentrations in all monitoring wells decrease below the performance standards.* This requirement was met for seven sampling events between September 2000 and September 2003 and the site was deleted from the NPL in 2006. Ground water monitoring, which continued as required by RCRA landfill closure requirements, have shown slight exceedances of the vinyl chloride cleanup goal during the past five-year period which are being addressed through natural attenuation.

The remedies for the Site are currently protective of human health and the environment.

Other Comments:

The materials excavated from the sludge lagoon were determined to be non-hazardous, were stabilized and were disposed of in the nearby landfill which was subsequently closed and is monitored pursuant to a RCRA landfill closure permit. The former lagoon area, which was the focus of the OU1 action under CERCLA, supports unrestricted use.

Ground water monitoring data from the past five years have shown slight exceedances of the vinyl chloride cleanup goal. Because ground water vinyl chloride concentrations are very close to the cleanup goal and in order to eliminate duplicative and unnecessary monitoring and oversight requirements, EPA will monitor ground water concentrations during the upcoming five-year period and if vinyl chloride concentrations decrease to below the cleanup goal for one year, EPA will discontinue conducting FYRs. Davie Landfill will continue to be subject to the RCRA requirements, including ground water monitoring, as discussed in the post-closure monitoring permit issued to Broward County by FDEP found in Appendix F.

Fourth Five-Year Review Report
for
Davie Landfill Superfund Site

1.0 Introduction

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings and conclusions of FYRs are documented in FYR reports. In addition, FYR reports identify issues found during the FYR, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

> "If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

> "If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action."

E^2 Inc., an EPA Region 4 contractor, conducted the FYR and prepared this report regarding the remedy implemented at the Davie Landfill site (the Site) in the Town of Davie, Broward County, Florida. This FYR was conducted from June 2010 to December 2010. EPA is the lead agency for developing and implementing the remedy for the Potentially Responsible Party (PRP)-financed cleanup at the Site. The Florida Department of Environmental Protection (FDEP), as the support agency representing the State of Florida, has reviewed all supporting documentation and provided input to EPA during the FYR process.

This is the fourth FYR for the Site. The triggering action for this policy review is the previous FYR. The FYR is required due to the fact that hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. The Site consists of two operable units (OUs), both of which are addressed in this FYR. OU1 addresses

cleanup of the Site's sludge lagoon area. OU2 addresses identification of any additional hot spots at the Site, and remediation of ground water, as necessary.

2.0 Site Chronology

Table 2 lists the dates of important events for the Site.

Table 1: Chronology of Site Events

Event	Date
Incinerator and landfill trash operations begin	1964
Sludge lagoon created and operations begin	November 1971
Broward County initiates water quality monitoring program	1974
Incinerator shutdown and sanitary landfill operations begin	June 1975
Site discovery	1979
Sludge Lagoon placed on EPA CERCLA Closure List	1981
Davie Landfill Site Geophysical Investigation 1 completed	1981
Site proposed to the National Priorities List (NPL)	1982
Site listed on the NPL	September 8, 1983
OU1 (sludge lagoon) Record of Decision (ROD) signed	September 27, 1985
OU1 remedial design start	May 22, 1986
Broward County submits landfill closure plan, which is accepted as the Remedial Investigation/Feasibility Study (RI/FS) for OU1	December 1987
Site closed	December 1987
Geophysical Investigation 2 completed	May 1988
OU1 remedial design complete	June 14, 1988
OU1 remedial action start	June 30, 1988
OU1 remedial action completed (removal of source contamination)	February 27, 1990
Administrative Order by Consent	March 3, 1992
OU2 RI/FS start	March 3, 1992
OU1 FYR signature	March 2, 1994
OU2 RI/FS completed	August 11, 1994
ROD signature for OU2	August 11, 1994
Unilateral Administrative Order	October 1994
OU2 remedial design start	November 4, 1994
Broward County Landfill Facility (the Site) officially closed by FDEP / post-closure monitoring permit issued by FDEP	February 7, 1995
FDEP concurs with OU2 ROD	April 1995
OU2 remedial design completed / remedial action started	July 28, 1995
OU2 remedial action completed	October 18, 1995
Construction completion date	November 1995
Preliminary Closeout Report (PCOR) signed, signifying construction completion of the remedial action	November 8, 1995
Consent Decree	October 10, 1996
OU2 FYR signature	June 16, 2000
Broward County Landfill Facility post-closure monitoring permit renewed by FDEP	September 13, 2000
Site officially opens as the Vista View public park	July 12, 2003
Completion Report to initiate the site deletion process	December 30, 2003
Letter of concurrence from FDEP to delete the Site from the NPL	August 27, 2004
Sitewide FYR signature	December 21, 2005
Broward County Landfill Facility post-closure monitoring permit renewed by FDEP	February 20, 2006
Site deleted from the NPL	August 21, 2006
Site qualifies for EPA Sitewide Ready for Anticipated Use Measure	2006
Additional Vista View Park space opens for public use adjacent to southern boundary of Site.	November 13, 2009
Broward County awarded EPA Region 4's Excellence in Site Reuse Award	June 25, 2010

3.0 Background

3.1 Physical Characteristics

The Site is a 209-acre former county incinerator and disposal facility located in the Town of Davie, Broward County, Florida, approximately 10 miles west of Fort Lauderdale. According to the U.S. Census' most recent estimate (2008), the Town of Davie's population is 96,053. The Site is bordered on the north by a Boy Scouts of America camp, on the east (Imagination Farms) and west (Riverstone) by residential subdivisions and to the south by newly developed park land and a telemetry tower owned by the South Florida Water Management District (SFWMD). The Site is currently zoned as "recreational open space" by the Town of Davie. The Site is not located in or near an environmentally sensitive area. A site location map is presented in Figure 1. A detailed site location map is presented in Figure 2. Broward County's parcel number for the Site is 504027010170.

The Site includes a 48-acre Class I (sanitary) landfill (the north mound), a 68-acre Class III (trash) landfill (the south mound) and a nature pond (the former sludge lagoon). The Site is located between two major drainage canals – the North New River Canal (approximately three-and-a-half miles to the north) and the South New River Canal, also known as the C-11 Canal (approximately a quarter-mile to the south).

Two large landfill mounds dominate the Site's topography. The north mound rises to approximately 80 feet above National Geodetic Vertical Datum (NGVD). The south mound has an elevation of approximately 70 NGVD. The lowest elevations at the Site include a nature pond where the former sludge lagoon was located and three borrow pit lakes (Lakes 1, 2 and 3) in the eastern and southern sections of the Site. The borrow pits were used as a source of limestone for landfill operations and cover material. The borrow pits are approximately 25 feet deep.

All surface water runoff is channeled to one of the three borrow pit lakes. Lakes 1, 2 and the nature pond are physically connected. The northern area of the Site drains to Lake 1 and Lake 2 and the southern area drains to Lake 3. There is a perimeter berm around the Site that is designed to withstand a 25-year, 72-hour storm event.

Two hydrogeological units are present in the vicinity of the Site: the surficial or water table aquifer, known as the Biscayne Aquifer, and the artesian aquifer known as the Floridan Aquifer. The Biscayne Aquifer is an unconfined aquifer and is approximately 100 feet thick at the Site. Because the Biscayne Aquifer is the only ground water source of potable water in Broward County, it is designated as a "sole source aquifer" under the Safe Drinking Water Act.

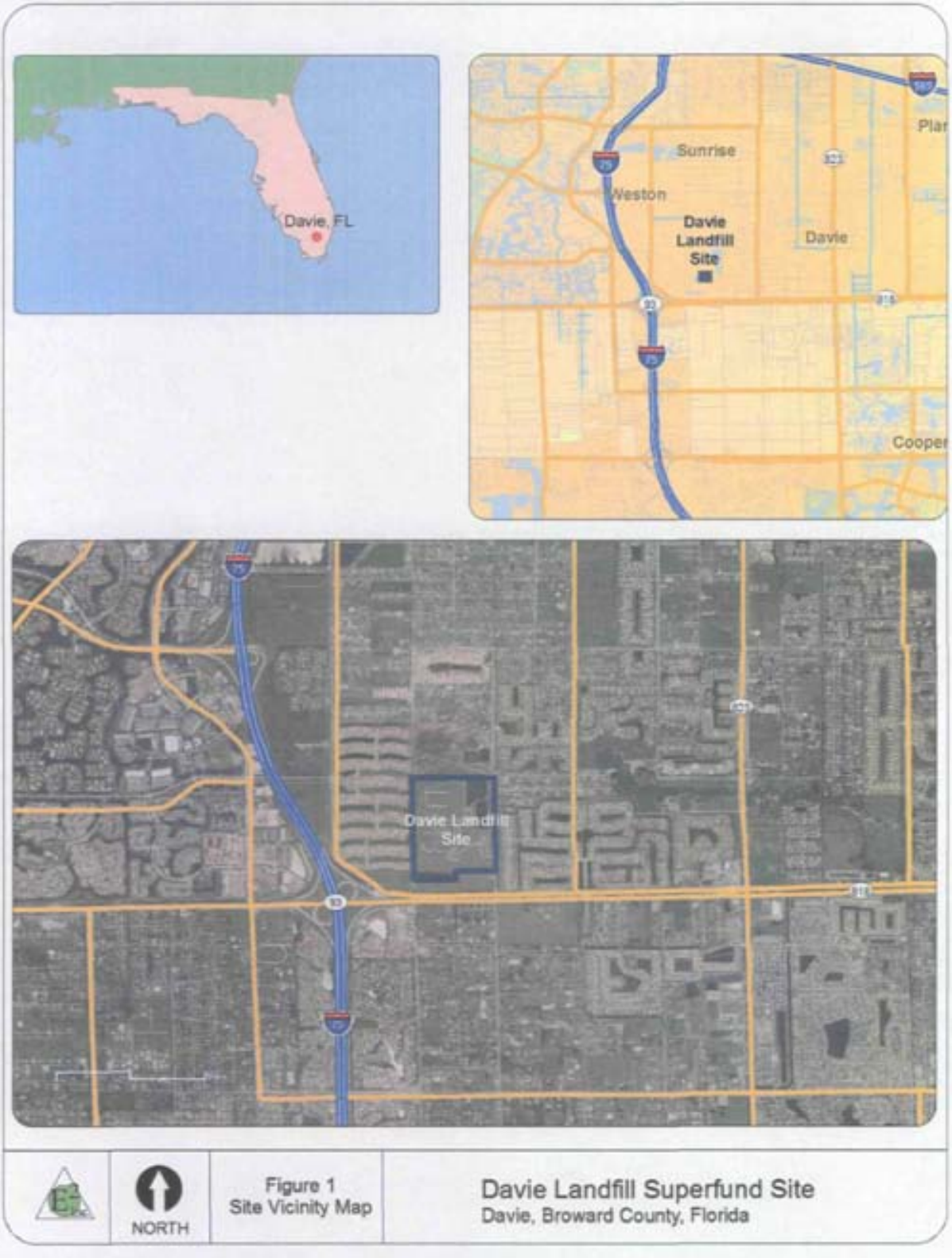
The Biscayne Aquifer consists of two hydraulically connected units. The upper Biscayne Aquifer is approximately 50 feet thick and consists of a series of interbedded sandy limestone, limestone and sandstone. Much of the upper aquifer was likely mined out to depths of 25 feet during borrow pit operations. The lower Biscayne Aquifer consists of

approximately 50 feet of sandstone that contains large solution holes, which are at least partially filled with sand. The hydraulic conductivity of the upper unit is estimated at 300 gallons per day per foot (gpd/ft). The hydraulic conductivity of the lower unit is estimated at 10,000 gpd/ft. Approximately 200 feet below the surface, a confining sequence of clays and marls known as the Hawthorn Group represents the regional upper confining unit for the Floridan Aquifer. The Floridan Aquifer is not hydraulically connected to the Biscayne Aquifer.

Based on water level measurements taken in September 1999 and November 1999, which were reviewed in the *July-December 1999 Semi-Annual Ground Water Report*, the potentiometric surface elevation of the underlying aquifer ranged from approximately four feet in the northwest portion of the landfill to approximately 2.3 feet in the southeast portion of the landfill. This indicates a southeasterly ground water flow direction on contour maps from 1978 and 1993. This is also the flow direction reported in the Site's 1985 Record of Decision (ROD).

The regional ground water gradient is reported to be about 0.4 feet per mile. The C-11 Canal has a direct effect on ground water flow at the Site. During mostly seasonal periods of high stage, the canal becomes a ground water recharge source and influences ground water flow in a northerly direction. During periods of low flows, the canal acts as a discharge area for ground water and enhances the southerly flow direction of site ground water. Therefore, fluctuations in ground water at the Site are directly related to precipitation and pumpage events in the area.

Figure 1: Site Location Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site, and is not intended for any other purpose.

Figure 2: Detailed Site Map

Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site, and is not intended for any other purpose.

3.2 Land and Resource Use

The Site, also known previously as the Broward County Sanitary Landfill, is owned and operated by Broward County. The facility began operation in 1964 as a garbage incinerator and a trash landfill, which accepted trash, construction and demolition debris, and ash from the incinerator. Incinerator operations shut down in 1975. Sanitary landfill operations began this same year. A basin area at the landfill was also used as a sludge lagoon for disposal of grease trap pump out material, septic tank sludge and treated municipal sludge from 1971 until 1981. The sludge lagoon was closed in 1981 by Broward County. Various parts of the landfill remained in use until 1987, when landfill operations ceased. At the time of the Site's OU1 ROD in 1985, there were approximately five, 95 and 500 dwellings within 500, 2,500 and 5,000 feet of the Site, respectively. The population of the Town of Davie in 1980 was 20,877. Drinking water for town residents was supplied from private wells, with the nearest well located approximately 1,700 feet from the Site.

According to the Site's 1994 ROD, approximately half of the residences within a one-mile radius of the Site, utilized private wells for domestic purposes (e.g., drinking, washing, irrigation). Following sampling in 1988 by the Broward County Public Health Unit which identified high levels of vinyl chloride in private wells in the residential area south of the Site, Broward County provided affected residents with bottled water and later, municipal water service. However, residents continued to use their private wells for irrigation.

According to the Site's OU2 ROD, ground water beneath the Site contained elevated levels of contaminants similar to levels present in wastes and leachate at the Site. The contamination was at very low levels and residents near the Site were, and continue to be, connected to the municipal water system as necessary (i.e., if the contamination affected or affects their private wells).

According to the Site's 2000 FYR, there is no known current consumption of ground water from the Biscayne Aquifer in the vicinity of the Site. Residents living adjacent to the Site were placed on the municipal water system.[1] According to the December 30, 2003 *Davie Landfill Superfund Site Completion Report* prepared by the Broward County Office of Integrated Waste Management Solid Waste Operations Division (Solid Waste Operations Division), public water supply lines were extended to residences affected by ground water contamination in 1988 and 1994.

Aside from cleanup activities, the Site was not in use between 1987 and 2003. In 2003, most of the Site was returned to use as Vista View Park, a Broward County regional park operated by the Broward County Parks and Recreation Division. The park opened to the public on July 12, 2003. Additional land to the south and west of the Site was acquired in 2002 and developed as additional recreational park space for Vista View Park. This new addition opened to the public in 2009.

[1] Residents could refuse connection to the municipal water system if they signed an affidavit.

In 2010, most of the Site remains in use as a park; the north mound (sanitary landfill) which is located outside the park boundary, remains fenced, gated and locked, and is closed to the public. Recreational land uses are the reasonably anticipated uses for the Site for the foreseeable future. The Site continues to be bordered to the north by the Boy Scouts of America camp. Residential subdivisions border the Site to the east and west. The SFWMD telemetry tower continues to border the Site to the south, along with the additional Vista View park land acquired in 2002. The surrounding area is primarily residential, with some recreational and commercial land uses. It is anticipated that these surrounding land uses will remain largely unchanged for the foreseeable future.

The Site qualified for EPA's Sitewide Ready for Anticipated Use measure in 2006, which signified that construction of the remedy had been completed, all cleanup goals had been achieved to reduce unacceptable risk that could affect current and reasonably anticipated future land uses of the Site, and all institutional controls, as applicable, had been implemented. In 2010, EPA Region 4 awarded Broward County its "Excellence in Site Reuse" Award for its work in turning the Site into Vista View Park. The Broward County award celebration brochure is included as Appendix E.

3.3 History of Contamination

The Broward County Sanitary Landfill (Davie Landfill) began operation in 1964. The facility included a garbage incinerator and a trash landfill, which accepted trash, construction and demolition debris and ash from the incinerator. In November 1971, the unlined lagoon at the facility was created in an on-site natural depression to receive grease trap pump outs, septic tank sludges and treated municipal sludges. In June 1975, the incinerator was closed because of excessive particulate emissions and a sanitary landfill was opened just to the north of the existing trash landfill. The sanitary landfill received residential solid waste, which included a mixture of garbage, rubbish, refuse and trash resulting from normal housekeeping activities. In 1975, the sludge lagoon was receiving an estimated 2,500 tons of waste per month. In 1977, dikes were constructed around the northern and eastern perimeters of the lagoon, which brought its height to an elevation of approximately 19 feet. By 1980, the volume of waste received by the lagoon had increased to an estimated 7,100 tons per month. Sludge lagoon waste included sludge from grease trap and septic tank pump outs and treated municipal sludge. EPA's initial sampling of sludge lagoon contents starting in 1982 characterized the sludge waste as being in the high range of typical wastewater treatment plant sludge hazardous constituents.

Ground water monitoring in the area of the landfill began in 1976. Initial sampling documented a plume of contamination moving to the southeast, in the same direction of general ground water movement in the area. It was assumed that the plume contained leachate from the trash and sanitary landfills as well as the sludge lagoon. The nearest receptors were private wells downgradient of the Site. Broward County monitoring reports in 1985 indicated that samples from these wells did not yield any drinking water quality violations. In 1988, Broward County's Public Health Unit sampled private wells in the residential area south of the Site and found elevated levels of vinyl chloride.

Broward County provided affected residents with bottled water and later, municipal water service.

3.4 Initial Response

Visible discharges from the sludge lagoon to an adjacent borrow pit led to concerns that the discharges could also be impacting the adjacent trash landfill and area ground water. As a result, Broward County restricted the lagoon's incoming waste to only grease trap pump outs in 1980. By 1981, ground water contamination concerns led Broward County to cancel all disposal operations at the lagoon. In December 1987, the Broward County Sanitary Landfill was closed in accordance with an agreement with the Town of Davie; this included both the trash and sanitary landfills. The 209-acre Broward County Sanitary Landfill (i.e., the Site) was officially closed on February 7, 1995 under Resource Conservation and Recovery Act (RCRA) landfill closure regulations administered through the State of Florida's Landfill Closure Program.

A shutdown of the incinerator for excessive emissions in 1975 was the first enforcement / compliance activity to occur at the Site. In November 1981, EPA designated the Site as a hazardous waste site under CERCLA. This designation required that Broward County cease all disposal activities at the lagoon. In August 1982, EPA initiated sampling activities at the lagoon. Sampling results characterized the waste as being in the high range of typical wastewater treatment plant sludge hazardous constituents. Relatively high concentrations of cyanide and sulfide were detected. Sampling events in July 1983 and May 1985 indicated reduced cyanide levels and the hazardous waste classification of the materials in the sludge lagoon was discontinued.

3.5 Basis for Taking Action

The Site was proposed for listing on the NPL in December 30, 1982 and listed on the NPL in September 8, 1983. The listing of the Site on the NPL initiated cleanup actions at the sludge lagoon. On September 27, 1985, EPA issued the OU1 ROD to clean up the sludge lagoon area. While the ROD stated that the Site consisted of a trash landfill, a sanitary landfill and a sludge lagoon, the area of concern under CERCLA was the 5.6-acre sludge lagoon. The 1985 ROD was intended to prevent continued contamination of the Biscayne Aquifer from infiltration through the unlined lagoon and by horizontal movement of the ground water and subsequent contact with lagoon contents. The primary pathway of concern identified was contaminant leaching to ground water and contaminant transport via the ground water to potable wells. As a result of the ROD, Broward County developed a closure plan for the sludge lagoon and the landfill. Because the plan was similar in nature to a remedial investigation/feasibility study (RI/FS), EPA accepted the plan as the RI/FS for OU1 in October 1987. The RCRA closure work was phased and completed through the State of Florida's landfill closure program in February 1995. A "Certificate of Construction of a Solid Waste Management Facility" certified by Broward County to FDEP shows that the work was completed without deviation from the approval plans.

In 1992, EPA and Broward County entered into an Administrative Order by Consent for completion of a supplemental RI/FS. Camp Dresser & McKee, Inc. undertook both the RI and FS. The RI's purpose was to determine if further CERCLA action was required at the Site. RI activities included installation of additional monitoring wells to characterize ground water contamination and sampling of soils, sediments and surface water to identify further sources of contamination. Results of the RI showed that the ground water, surface water, sediment and soils at and in the vicinity of the Site contained, with few exceptions, minimal to non-detectable levels of contaminants. In December 1993, Roy F. Weston, Inc. also completed the *Baseline Risk Assessment Report* on behalf of EPA. The risk assessment addressed risk to human health and environment at the Site. The risk assessment determined that the only receptor and pathway of concern at the Site was the future resident, via ground water ingestion. The RI Report was finalized in January 1994, and the FS Report was finalized in April 1994.

4.0 Remedial Actions

Consideration of Remedial Alternatives: OU1 Source Control

Several remedial alternatives were considered for the OU1 portion of the Site in the 1985 ROD, and final selection was made based on an evaluation of the alternatives. Alternatives were screened out for the following reasons:

- Alternative does not meet regulatory requirements.
- Alternative has serious environmental liabilities.
- Alternative has serious reliability or constructability liabilities.
- Comparable technology exists at a lower cost.

The final remedy selected was determined to be the lowest-cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare or the environment.

Consideration of Remedial Alternatives: OU2 Ground Water

In accordance with CERCLA and the NCP, the overriding goals for any remedial action are protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs). A number of remedial alternatives were considered for the OU2 portion of the Site in the 1994 ROD, and final selection was made based on an evaluation of each alternative against nine evaluation criteria that are specified in Section 300.430(e)(9)(iii) of the NCP. The nine criteria include:

1. Overall Protectiveness of Human Health and the Environment
2. Compliance with ARARs
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment
5. Short-term Effectiveness
6. Implementability
7. Cost
8. State Acceptance
9. Community Acceptance

4.1 Remedy Selection

On September 27, 1985, EPA issued a ROD for OU1 to remediate the sludge lagoon area. Although the ROD outlined that the Site consisted of a trash landfill, a sanitary landfill and a sludge lagoon, the area of concern under CERCLA was the 5.6-acre sludge lagoon containing an estimated 75,000 cubic yards of sludge from grease trap and septic tank pump outs and treated municipal sludge.

The 1985 ROD called for:

- Excavation, dewatering and stabilization of the sludge lagoon contents.
- Disposal of sludge lagoon source materials in the single-lined sanitary landfill cell 14.
- Placement of a cap over landfill cell 14.

The specific cleanup goal as specified in the 1985 ROD was to prevent potable water from exceeding applicable drinking water standards or the cancer risk of 1×10^{-6}. Corresponding recommended residual concentration levels in soil were established for lead, chromium, cadmium, arsenic and mercury.

Table 2: OU1 Soil Contaminants of Concern and Recommended Residual Concentrations

Contaminant of Concern	Recommended Residual Concentration (mg/kg))
Arsenic	2
Cadmium	25
Chromium	25
Lead	1,000
Mercury	20

The 1988 *Final Remedial Design Report* prepared by Post, Buckley, Schuh & Jernigan, Inc. notes that prior to issuing the 1985 ROD, EPA sampled and tested the sludge and determined it to be non-hazardous based on Extraction Procedure Toxicity Test results. In 1983 and 1984, Hazen and Sawyer, P.C. performed sampling and testing activities which confirmed EPA's analytical results. In addition, the report notes that three feet of foundation material would be removed to assure the removal of all contaminated subsoils. The *Remedial Action Work Plan* also prepared by Post, Buckley, Schuh & Jernigan, Inc. further noted that once all of the sludge and visibly contaminated soil has been removed, the foundation material and approximately 3 feet along the side slopes of the dike will be excavated to elevation 0.0.

EPA issued the ROD for OU2 on August 11, 1994. As stated in the 1994 ROD, the function of the OU2 remedy was to reduce the risks associated with exposure to contaminated ground water. The selected remedy for OU2 as specified in the 1994 ROD included the following components:

- Natural attenuation of vinyl chloride and antimony.
- Ground water monitoring to confirm natural attenuation.
- Monitoring of residential wells to determine the impact upon such private wells.
- Public water supply connections for residents that have been affected by contamination in excess of the levels above performance standards.

Remedy performance standards as specified in the 1994 ROD were based on achieving specific maximum concentration levels for antimony and vinyl chloride. According to the

1994 ROD, completion of the landfill closure under the FDEP landfill closure permit was expected to eliminate the only remaining source of contamination in the ground water, surface soils, surface water and sediments.

Table 3: OU2 Ground Water Contaminants of Concern and Remedy Performance Standards

Contaminant of Concern	Maximum Concentration Levels (µg/L)
Vinyl chloride	1
Antimony	6

4.2 Remedy Implementation

OU1 remedial design as specified in the 1985 ROD began in May 1986 and was concluded in June 1988. The OU1 remedial action began in June 1998 and was completed in February 1990. The 1985 ROD established the objective of reducing the potential for future regional migration of ground water constituents associated with the landfill. The sludge lagoon cleanup consisted of three major phases:

Excavation and stabilization of lagoon sludge
This phase involved the excavation, stabilization and disposal of 82,158 cubic yards of lagoon sludge in Cell 14. In addition to the original sludge lagoon area, sludge was removed from the eastern side of the slope and toe of the south mound, the dike area and the concrete off-loading ramp area.

Excavation of unsuitable material
This phase involved the excavation and disposal of material from the project area that was unsuitable for fill, including the dike surrounding the lagoon, which had been constructed with trash, construction debris and other materials. A total of 57,626 cubic yards of unsuitable material was excavated and disposed in Cell 14 and the Trash Landfill (South Mound).

Excavation of foundation material
This phase involved the excavation to-depth of the areas of contamination surrounding the two sample point locations where arsenic cleanup goals had been slightly exceeded; sampling points indicated that all other cleanup goals established in the 1985 ROD had been achieved. It also involved a surface scrape of the lagoon area. A total of 23,404 cubic yards of foundation material was excavated and disposed in Cell 14.

The area of the former sludge lagoon was sampled until all 1985 ROD cleanup goals had been met. The *Remedial Investigation Report* completed by Camp Dresser & McKee, Inc. in October 1993 revealed that the remediation of the sludge lagoon in 1989 was effective in reducing contamination at the Site. The results of the RI showed that the ground water, surface water, sediment and soils at and in the vicinity of the Site contained, with few exceptions, minimal-to-non-detectable levels of contaminants. EPA's December 1993 baseline risk assessment determined that the only receptor and pathway of concern at the Site was a potential future resident, via ground water ingestion.

The remedial design for the 1994 (OU2) ROD began in November 1994 and concluded in July 1995. The *Remedial Design Report* was prepared by the Broward County Solid Waste Operations Division. Remedial action was started in July 1995 and completed in October 1995. Implementation of the four components of the selected remedy for OU2 was separated in the *Remedial Design Report* by the execution of separate plans. The report contained:

- A Sampling and Analysis Plan.
- A Health and Safety Plan.
- A Water Quality Monitoring Plan.
- A Residential Well Monitoring Plan.
- A Public Water Supply Extension Plan.

Because this execution of plans did not require any major construction activities for the remedial design or the remedial action, EPA determined that a remedial action report was not necessary. On October 18, 1995, EPA acknowledged that the requirements of the ROD had been fulfilled and that the remedial action at the site was both operational and functional. The Site achieved construction complete status in November 1995. EPA completed the *Superfund Site Preliminary Closeout Report* for the Site in November 1995 as well.

The 1994 ROD required ground water monitoring until ARARs for site contaminants of concern were met, and post-remediation monitoring for a minimum of one year confirmed that the performance standards have been attained. After seven semiannual sampling events (September 2000 through September 2003) showed concentrations of vinyl chloride and antimony to be below the established ROD performance standards in all 22 wells included as part of the monitoring network, Broward County submitted a completion report to EPA Region 4 indicating that all cleanup goals required under the 1985 and 1994 RODs had been met and requesting that EPA initiate the process of deleting the Site from the NPL. On August 27, 2004, FDEP formally concurred with the request for deletion of the Site from the NPL. On August 21, 2006, EPA officially deleted the Site from the NPL.

4.3 Operation and Maintenance (O&M)

The Site's O&M activities effectively started with the FDEP-certified landfill closure on February 7, 1995. Under the terms of the Solid Waste Resource Recovery and Management Facility post-closure monitoring permit issued for the Broward County Landfill Facility by the state[2], O&M will continue through at least February 7, 2015. Under the requirements of the Unilateral Administrative Order issued by EPA in October 1994, Broward County submitted quarterly and annual summary status reports to EPA. Since deletion of the Site in August 1996, EPA no longer requires these reports. The purpose of the reports was to inform EPA regarding work schedules, work accomplished and work remaining to be accomplished at the Site.

OU1 ROD-required O&M activities included:

- Maintaining site drainage.
- Preventing erosion.
- Maintaining grass cover.

[2] The post-closure monitoring permit applies to the Broward County Sanitary Landfill, which is defined as the same 209-acre area that constitutes "the Site" under CERCLA.

- Site security.
- Monitoring ground water.
- Disposing of leachate collected from sanitary landfill.

Since site deletion, Broward County is no longer required to submit quarterly and annual summary status reports to EPA. However, under the conditions of Broward County's Solid Waste Resource Recovery and Management Facility post-closure monitoring permit issued for the Broward County Landfill Facility by the State of Florida on February 20, 2006, and as required by the state's landfill closure regulations, Broward County issues semi-annual monitoring reports for the Site to FDEP.[3] The current post-closure monitoring permit is due to expire on February 7, 2015. The current permit is included as Appendix F.

The Broward County Landfill Facility post-closure monitoring permit requires the semiannual sampling of seven ground water monitoring well clusters (numbered 3, 7, 8, 9, 11, 21 and 22). The well clusters comprise three monitoring wells at different depths, with the exception of Cluster 11, which comprises four monitoring wells at different depths. Ground water samples collected from the wells are analyzed for a comprehensive suite of parameters in accordance with the post-closure monitoring permit, including vinyl chloride and antimony, the OU2 contaminants of concern.

Cluster 22 serves as the background well cluster and Clusters 11 and 21 are downgradient well clusters. All appropriate quality assurance/quality control measures have been, and will continue to be, followed for sample collection, sample transport and laboratory analytical testing. None of the wells required to be sampled under the post-closure monitoring permit have been closed or abandoned. However, all other monitoring wells associated with the Site (if found) have been properly abandoned. There have been no requirements to install additional monitoring wells since the initial ground water monitoring plan was approved by FDEP. Any exceedances are discussed in the county's semi-annual reports issued to the state.

Other O&M activities included as part of post-closure monitoring permit and other state landfill closure requirements include: site inspections, landfill cover maintenance, stormwater system maintenance, surface water management system maintenance, leachate collection system maintenance, landfill gas recovery system maintenance, annual leachate collection/analysis, and semiannual ground water collection/analysis(as mentioned above). Since the 2005 FYR, the landfill gas recovery system has been shut down. FDEP recently approved the removal of the landfill gas system.

Broward County continues to conduct required O&M activities to maintain the protectiveness of the Site's remedy. Photographs documenting current site conditions are included in Appendix H. Annual O&M costs are presented in Table 4. O&M costs reflect all O&M activities being performed by Broward County.

[3] The post-closure monitoring permit applies to the Broward County Sanitary Landfill, which is defined as the same 209-acre area that constitutes "the Site" under CERCLA.

Table 4: Annual O&M Costs

Year	Total Cost (rounded to the nearest $1,000)
2005	417,000
2006	450,000
2007	362,000
2008	369,000
2009	606,000

5.0 Progress Since the Last Five-Year Review

The protectiveness statement from the 2005 FYR for the Site stated the following:

Presently the remedies at the Davie Landfill Site remain protective of human health and the environment. In summary:

- *The landfill caps appear to be effective at containing contaminants through limiting infiltration of rainwater and preventing direct contact with contaminated soils.*
- *The gas recovery and flaring system is operating as intended.*
- *The three retention lakes, weirs and perimeter berm remain effective in routing and retaining surface runoff.*
- *Because the remedial actions at all Operable Units are protective, the site is protective of human health and the environment.*

The 2005 FYR presented one issue and one recommendation. The issue centered on the ongoing efforts of Broward County to have its Broward County Landfill Facility post-closure monitoring permit renewed. FDEP renewed the permit in 2006. The recommendation from the 2005 FYR and its current status is discussed below.

Table 5: Progress on Recommendations from the 2005 FYR

Section	Recommendations	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
5.1	Vinyl chloride at MW-11-100 should be monitored closely during future ground water monitoring events and evaluated during the next FYR.	Broward County	Future ground water monitoring events / next FYR	Broward County continues to closely monitor MW-11-100 through semi-annual monitoring.	Semiannually

5.1 Recommendation 1

Broward County continues to closely monitor MW-11-100 on a semiannual basis along with other ground water monitoring wells required as a condition of its FDEP post-closure monitoring permit.

6.0 Five-Year Review Process

6.1 Administrative Components

EPA Region 4 initiated the FYR in May 2010 and scheduled its completion for December 2010. The EPA site review team was led by EPA Remedial Project Manager (RPM) Bill Denman, EPA Community Involvement Coordinator (CIC) L'Tonya Spencer and contractor support provided to EPA by E^2 Inc. In June 2010, EPA held a scoping call with the review team to discuss the Site and items of interest as they related to the protectiveness of the remedy currently in place. A review schedule was established that consisted of the following activities:

- Community notification.
- Document review.
- Data collection and review.
- Site inspection.
- Local interviews.
- FYR Report development and review.

6.2 Community Involvement

In June 2010, a public notice was published in the *Sun Sentinel* newspaper announcing the commencement of the FYR process for the Site, providing contact information for EPA RPM Bill Denman and CIC L'Tonya Spencer and inviting community participation. The press notice is available in Appendix B. No one contacted EPA as a result of this advertisement.

The FYR Report will be made available to the public once it has been finalized. Copies of this document will be placed in the designated site repository: Broward County Public Library, 100 S. Andrews Avenue – Level 5, Fort Lauderdale, Florida. Upon completion of the FYR, a public notice will be placed in the *Sun Sentinel* newspaper to announce the availability of the final FYR Report in the Site's document repository.

6.3 Document Review

This FYR included a review of relevant, site-related documents, including the 1985 and 1994 RODs, remedial action reports, and recent monitoring data. A complete list of the documents reviewed can be found in Appendix A.

ARARs Review

Section 121 (d)(2)(A) of CERCLA specifies that Superfund remedial actions must meet any federal standards, requirements, criteria or limitations that are determined to be ARARs. ARARs are those standards, criteria or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant,

remedial action, location or other circumstance at a CERCLA site. To-Be-Considered criteria (TBCs) are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary level of cleanup for protection of human health or the environment. While TBCs do not have the status of ARARs, EPA's approach to determining if a remedial action is protective of human health and the environment involves consideration of TBCs along with ARARs.

Chemical-specific ARARs are specific numerical quantity restrictions on individually listed contaminants in specific media. Examples of chemical-specific ARARs include the MCLs specified under the federal Safe Drinking Water Act as well as the ambient water quality criteria enumerated under the Clean Water Act. Because there are usually numerous contaminants of potential concern for any Site, various numerical quantity requirements can be ARARs. The final remedy selected for this Site was designed to meet or exceed all chemical-specific ARARs and meet location- and action-specific ARARs.

Chemical-specific ARARs are identified in the selected remedy within the Site's OU2 ROD for ground water contamination. Chemical-specific ARARs are listed in Table 6. Ground water cleanup goals for the Site have been met but monitoring continues in accordance with the Broward County Sanitary Landfill post-closure monitoring permit.

Ground Water

The Site's remedy for OU2 was selected in the 1994 ROD and established cleanup goals for the two ground water contaminants of concern (COCs) listed in Table 6. The ground water cleanup goal for vinyl chloride was based on the Florida primary drinking water MCL; the ground water cleanup goal for antimony was based on the federal primary drinking water MCL. Standards for the COCs have not changed.

Table 6: Ground Water ARARs

Contaminant of Concern	1994 ROD ARARs (µg/L)	Current ARARs (µg/L)	ARARs Change
Vinyl chloride	1	1[a]	No
Antimony	6	6[b]	No

a. Cleanup goal is based on the Florida Safe Drinking Water Act MCL. Available at: http://www.dep.state.fl.us/legal/Rules/drinkingwater/62-550.pdf (accessed 6/29/2010).
b. Cleanup goal is based on federal Safe Drinking Water Act MCL. Available at: http://www.epa.gov/safewater/contaminants/index.html (accessed 6/29/2010).

6.4 Data Review

Soil/Sediment Data

In 1989, sludge lagoon contents, including contaminated materials, in the former sludge lagoon were excavated, stabilized and disposed of in the nearby landfill. This landfill was later closed under FDEP landfill closure regulations pursuant to RCRA. The area of the former sludge lagoon was sampled to determine if all OU1 ROD cleanup goals had been met or contamination removed. The *Remedial Investigation Report* completed by Camp Dresser & McKee, Inc. in October 1993 revealed that the remediation of the sludge lagoon in 1989 was effective in reducing contamination at the Site. The results of the RI showed that the ground water, surface water, sediment, and soils at and in the vicinity of the Site contained, with few exceptions, minimal to non-detectable levels of contaminants. Since then, soil/sediment data has not been collected.

Ground Water

The Broward County Landfill Facility post-closure monitoring permit pursuant to RCRA requires the semiannual sampling of seven ground water monitoring well clusters. The well clusters comprise three monitoring wells at different depths, with the exception of one (Cluster 11), which comprises four monitoring wells at different depths. Data is collected from 22 monitoring wells. Ground water samples collected from the wells are analyzed for a comprehensive suite of parameters in accordance with the post-closure monitoring permit, including vinyl chloride and antimony, the 1994 ROD contaminants of concern. None of the wells required to be sampled under the post-closure monitoring permit have been closed or abandoned. However, all other monitoring wells associated with the Site (if found) have been properly abandoned. There have been no requirements to install additional monitoring wells since the initial ground water monitoring plan was approved by FDEP.

Ground water sampling data from September 2005 through October 2010 were reviewed as part of this FYR. Monitoring data for antimony collected during this time revealed that, of the 22 monitoring wells tested, no detectable levels of antimony concentrations above the 1994 ROD cleanup goal of 6 micrograms per liter (µg/L), and that levels were well below the cleanup goal.

Monitoring data for vinyl chloride collected during this time revealed that, of the 22 monitoring wells tested, 20 wells had no detectable levels of vinyl chloride above the cleanup goal of 1 µg/L during the past five-year years, and that levels were well below the cleanup goal. Of the two remaining wells tested, monitoring well (MW) 11-57 and MW11-100 had detectable levels of vinyl chloride above the cleanup goal of 1 µg/L. Tested 11 times between September 2005 and October 2010, MW11-57 had detectable levels of vinyl chloride above the cleanup goal twice: once in April 2008, at a level of 1.02 µg/L, and once in April 2009, at a level of 1.29 µg/L. MW11-100 had detectable levels of vinyl chloride above the cleanup goal eight of the 11 times tested during this time, including the sample collected in April 2010. Of the eight times that MW11-100

had detectable levels of vinyl chloride above the cleanup goal, the highest exceedance was 2.17 µg/L (April 2007) and the lowest was 1.28 µg/L (April 2010). During the past year (2010), only MW11-100 exceeded the ground water cleanup goal of 1 µg/L for vinyl chloride with a concentration of 1.28 µg/L detected in April 2010.Complete monitoring results are presented in Appendix G.

Both MW11-57 and MW11-100 are located on the far southern boundary of the Site as part of monitoring well Cluster 11, which includes four monitoring wells. Detectable levels of vinyl chloride in the samples drawn from the other two wells in this cluster (the shallowest well, MW11-31, and the second-deepest well, MW11-75) remained well below the cleanup goal. The *Semi-Annual Monitoring Report (December 15, 2010)* prepared for Broward County Solid Waste Operations Division by URS Corporation indicated that ground water sample detections were consistent with historical monitoring data and that all exceedances were within the property boundary. Ground water monitoring data reviewed as part of the 2005 FYR (May 2004 through September 2004) identified two exceedances of vinyl chloride in samples drawn for MW11-100 in 2004 (2.6 µg/L and 1.7 µg/L). No exceedances were identified for MW11-57. The FYR reports that, the slight exceedances in 2004 of ground water (MW-11-100) MCLs at the Davie Landfill do not appear to pose any immediate threat to human health or the environment. Table 7 provides a summary of the vinyl chloride concentrations exceeding the cleanup goal that have been observed from 2005 through 2010.

Table 7: 2005-2010 Ground Water Vinyl Chloride Concentrations for the Two Ground Water Monitoring Wells with Samples Exceeding Cleanup Goal of 1.0 µg/L

MW	2005	2006		2007		2008		2009		2010	
	Sept.	May	Sept.	April	Sept.	April	Sept.	April	Sept.	April	Oct.
11-57	<1	<0.31	<0.31	<0.34	<0.34	**1.02**	<1	**1.29**	0.600	0.730	0.739
11-100	**1.70**	**2.10**	**2.10**	**2.17**	**1.90**	**1.50**	0.96	**2.10**	<0.414	**1.280**	0.604
All units in micrograms per liter (µg/L) Exceedances are bolded.											

6.5 Site Inspection

The site inspection for the Site's fourth FYR was conducted on June 25, 2010. The inspection was conducted by EPA site RPM Bill Denman, Jan Rogers, a representative from EPA Region 4's South Florida Office, Theresa Pepe with the FDEP Hazardous Waste Cleanup Section, Richard Meyers with the Broward County Solid Waste Operations Division, and Treat Suomi and Eric Marsh, contractor staff from E^2 Inc.

The team assessed the status of the remediated sludge lagoon area as well as maintenance of the two nearby landfills and the condition of the Site more generally. The team observed that the excavated sludge lagoon area supports an array of terrestrial and aquatic plant life and appeared to be in good condition. The sanitary landfill was being operated in accordance with required O&M activities. No visible problems with site remedies

were identified. The site inspection checklist is included in Appendix D. Site inspection photos are included in Appendix H.

On June 25, 2010, E² Inc. staff visited the designated site repository, the Broward County Public Library, which is located at 100 S. Andrews Avenue in Fort Lauderdale, Florida, as part of the site inspection. The site repository contained many volumes of early site investigation documents and remedial action planning documents and appeared up to date. The most recent 2000 and 2005 FYRs as well as the site deletion document were also available. E² Inc. staff also conducted site-related deed research at the Broward County Public Records Office. No deed-related information was identified. The entire Site is owned by Broward County and is operated as a county park.

Institutional controls are not required in site decision documents. The 1994 ROD stated that the FDEP landfill closure permit "requires that the Site be zoned for parks and recreation and that public water and sewer be provided to park facilities." The ROD further states that "because ground water samples taken from the landfill property showed no significant amounts of contamination, no further deed restrictions or ground water use restrictions are considered necessary on the landfill property." In 2010, the Town of Davie's Planning and Zoning Division confirmed that Vista View Park has been zoned by the Town as "Recreational Open Space."

Table 8 and Table 9 summarize institutional control information associated with areas of interest at the Site.

Table 8: OU1 Institutional Control (IC) Summary Table

Area of Interest – OU1 Source Control of Contamination from Sludge Lagoon (Parcel: 504027010170)						
Media	**ICs Needed**	**ICs Called for in the Decision Documents**	**Impacted Parcel(s)**	**IC Objective**	**Instrument in Place**	**Notes**
Former sludge lagoon (nature pond)	No	No	504027010170	None	Area is zoned as recreational open space.	Former sludge lagoon is located near middle of park operated by Broward County

Table 9: OU2 Institutional Control (IC) Summary Table

Area of Interest – OU2 Site Ground Water (Parcel: 504027010170)						
Media	**ICs Needed**	**ICs Called for in the Decision Documents**	**Impacted Parcel(s)**	**IC Objective**	**Instrument in Place**	**Notes**
Site ground water	No	No	504027010170	None	Area is zoned as recreational open space.	Public water and sewer is provided to park facilities.

6.6 Interviews

During the FYR process, interviews were conducted with parties impacted by the Site, including current landowners and regulatory agencies involved in site activities or aware of the Site. The purpose of the interviews was to document the perceived status of the Site and any perceived problems or successes with the phases of the remedy that have been implemented to date. All of the interviews were conducted during the site inspection on June 25, 2010 by E^2 Inc. staff.

Interviews were conducted with several nearby residents and Vista View Park users. None of the residents/park users expressed concerns regarding the Site's cleanup, although one couple living near the Site were concerned that the landfill could impact water quality, particularly in the canals that run through their subdivision. E^2 Inc. also interviewed an on-site Vista View Park administrator. The park administrator was satisfied with site cleanup efforts and further explained that park users had not expressed any related concerns to him. In addition, E^2 Inc. staff interviewed regulatory staff from Broward County, FDEP and EPA Region 4. Regulatory officials were also satisfied with the cleanup of the Site. Regulatory officials recommended that FYRs be discontinued or that their discontinuation be considered. Interviews are summarized below and complete interviews are included in Appendix C.

Resident 1/Park User: E^2 Inc. interviewed a couple who live near the Site and frequently visit Vista View Park. Both were aware that the Site had been a landfill that was converted to a park. Both residents were satisfied generally with the park. They expressed some concerns regarding water quality in their neighborhood that may be impacted by the Site, but they review water quality monitoring reports.

Resident 2/Park User: Resident 2 was aware the Site had been a landfill and had heard that it was a Superfund site. The resident did not have any specific concerns about the Site's cleanup but is interested in obtaining more information about the Site.

Resident 3/Park User: Resident 3 was aware of the environmental issues associated with the Site. Resident 3 did not have any concerns about the Site's cleanup.

Resident 4/Park User: Resident 4 was aware that the Site was a landfill. Resident 4 did not have any concerns about the Site's cleanup.

Chris Deal: Mr. Deal is an on-site Vista View Park administrator with the Broward County Parks and Recreation Division. He is satisfied with cleanup efforts at the Site. Park users have not expressed to him any concerns about the cleanup of the Site.

Richard Meyers: Mr. Meyers is the Waste and Recycling Services Expansion Project Manager for Broward County's Solid Waste Operations Division. He is extremely satisfied with efforts to convert Davie Landfill into a park. He believes the site remedy is functioning as well as could be expected and no problems have been encountered which would require changes to the Site's remedial design. Similarly, no problems have been encountered in the Site's O&M phase. Over the past five years, he has not received any complaints about the Site from nearby residents regarding environmental issues associated with the Site. Given the success of the remedy, Mr. Meyers feels strongly that EPA seriously consider discontinuing FYRs.

Theresa Pepe: Ms. Pepe is a project manager in FDEP's Hazardous Waste Cleanup Section. Ms. Pepe believes that site cleanup has gone very well. The site remedy has performed as intended. In addition, her office has not received any complaints about the Site. Regarding future FYRs, Ms. Pepe remarked that they almost seem redundant since the landfill closure is being monitored under RCRA. However, she would have to take the issue up with her management.

Bill Denman: Mr. Denman is the EPA RPM for the Site. Mr. Denman remarked that he was very pleased with the cleanup and redevelopment of the Site. He believes that the remedy is performing well and no issues have been identified in the past five years that would call into question the remedy's effectiveness. He also feels that FYRs for this Site can be discontinued.

7.0 Technical Assessment

7.1 Question A: Is the remedy functioning as intended by the decision documents?

The review of site documents, ARARs, risk assumptions, and the site inspection indicate that the selected remedies are functioning as intended by the RODs for OU1 and OU2. The excavation, stabilization and placement of sludge lagoon contents under a capped cell in the nearby landfill closed pursuant to RCRA landfill closure regulations has eliminated the potential for sludge lagoon contents to contribute to ground water contamination. Prior to excavation, EPA sampled and tested the sludge material and determined it to be non-hazardous. Follow-up sampling prior to excavation confirmed EPA's initial findings. All sludge material was removed; an additional three feet of the sludge lagoon foundation was also removed. Ground water cleanup goals were achieved and monitored for one additional year as required by the ROD. Ground water contamination was addressed through monitored natural attenuation (MNA). The most recent sampling event continues to show that the ground water cleanup goal for antimony is being met. The ground water cleanup goal for vinyl chloride continues to be met for all wells except two located on the southern boundary of the Site as part of Cluster 11. Of the four wells located in this cluster, two wells have exceeded the ground water cleanup goal. One of these wells, MW11-100, has historically shown periodic concentrations exceeding the cleanup goal of 1.0 µg/L for vinyl chloride but concentration levels in samples collected for this well from 2005 to 2010 show no clear trends of increasing or decreasing: the highest exceedance was 2.17 µg/L in April 2007 and the lowest exceedance was 1.28 µg/L in April 2010. The other well, MW11-57, had detectable levels of vinyl chloride above the cleanup goal twice between September 2005 and October 2010: once in April 2008 at a level of 1.02 µg/L and once in April 2009 at a level of 1.29 µg/L. During the past year (2010), only MW11-100 exceeded the ground water cleanup goal of 1 µg/L for vinyl chloride with a concentration of 1.28 µg/L detected in April 2010.

O&M activities are currently being performed in accordance with the state landfill post-closure requirements pursuant to RCRA. The Broward County Landfill Facility post-closure monitoring was renewed in 2006 and expires in 2015.

Neither the 1985 ROD nor the 1994 ROD required institutional controls. Institutional controls are not required since the areas of the Site addressed by the two RODs do not prohibit unrestricted use and unlimited exposure. Although two landfills fall within the Site's boundaries, only site-related ground water and the former sludge lagoon were addressed under CERCLA authority.

Because ground water vinyl chloride concentrations are very close to the cleanup goal and in order to eliminate duplicative and unnecessary monitoring and oversight requirements, EPA will monitor ground water concentrations during the upcoming five-year period and if vinyl chloride concentrations decrease to below the cleanup goal for one year, EPA will discontinue conducting Five-Year Reviews. The Davie Landfill will continue to be subject to the RCRA requirements, including ground water monitoring, as

discussed in the post-closure monitoring permit issued to Broward County by FDEP found in Appendix F.

7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

No information was identified that would call into question the cleanup goals established for sludge lagoon materials in the 1985 ROD. EPA's 1993 baseline risk assessment concluded that the only receptor and pathway of concern at the site was the future resident, via ground water ingestion. The ground water cleanup goals established in the 1994 ROD, based upon drinking water standard MCLs, are still valid.

7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No new information has come to light that could call into question the protectiveness of the remedy.

7.4 Technical Assessment Summary

The assessment of the Site for this FYR, based on the review of documents, ARARs, risk assumptions and the site inspection, indicate that the selected remedy is functioning as intended by both site RODs. The OU1 selected remedy is protective of human health and the environment because exposure pathways that could result in unacceptable risks have been addressed. The excavation, stabilization and placement of sludge lagoon contents under a capped cell in the nearby landfill closed in accordance with RCRA landfill closure regulations has eliminated the potential for sludge lagoon contents to contribute to ground water contamination. Prior to excavation, EPA sampled and tested the sludge material and determined it to be non-hazardous. Follow-up sampling prior to excavation confirmed EPA's initial findings. All sludge material was removed; an additional three feet of the sludge lagoon foundation was also removed. Following remediation, the former sludge lagoon was redeveloped into a nature pond as part of a county park. The nature pond is heavily vegetated and is located near the park's center.

The OU2 selected remedy is currently protective of human health and the environment because exposure pathways that could result in unacceptable risks have been addressed. Ground water cleanup goals were achieved and monitored for one additional year as required by the ROD. Monitoring data collected between September 2005 and October 2010 revealed no detectable levels of antimony concentrations above the cleanup goal. Monitoring data collected during this time revealed no levels of vinyl chloride above the cleanup goal in 20 of the 22 ground water monitoring wells. Two wells included as part of a four-well cluster (#11) located on the southern site boundary have exceeded ground water cleanup goals for vinyl chloride. These exceedances are both sporadic and minimal in concentration and show no clear trend that contaminant concentrations will remain above the MCL. During the past year (2010), only MW11-100 exceeded the ground water cleanup goal of 1 µg/L for vinyl chloride with a concentration of 1.28 µg/L detected in April 2010. These two wells are located in a portion of the Site that is

operated as a county park. Residences located in the area near the Site are connected to public water supplies.

Because ground water vinyl chloride concentrations are very close to the cleanup goal and in order to eliminate duplicative and unnecessary monitoring and oversight requirements, EPA will monitor ground water concentrations during the upcoming five-year period and if vinyl chloride concentrations decrease to below the cleanup goal for one year, EPA will discontinue conducting Five-Year Reviews. Davie Landfill will continue to be subject to the RCRA requirements, including ground water monitoring, as discussed in the post-closure monitoring permit issued to Broward County by FDEP found in Appendix F.

8.0 Issues

None

9.0 Recommendations and Follow-up Actions

None

10.0 Protectiveness Statements

The remedy for OU1 at the Site currently protects human health and the environment because the excavation and disposal of sludge lagoon contents contaminated with lead, chromium, cadmium, arsenic and mercury has eliminated any source material that may have been contributing to ground water contamination.

The OU2 selected remedy is currently protective of human health and the environment because exposure pathways that could result in unacceptable risks have been addressed and natural attenuation is occurring. The OU2 ROD stated: *Monitoring will continue for at least one year after the concentrations in all monitoring wells decrease below the performance standards.* This requirement was met for seven sampling events between September 2000 and September 2003 and the site was deleted from the NPL in 2006. Ground water monitoring, which continued as required by RCRA landfill closure requirements, have shown slight exceedances of the vinyl chloride cleanup goal during the past five year period which are being addressed through natural attenuation.

The remedies for the Site are currently protective of human health and the environment.

11.0 Next Review

The materials excavated from the sludge lagoon were determined to be non-hazardous, were stabilized and were disposed of in the nearby landfill which was subsequently closed and is monitored pursuant to a RCRA landfill closure permit. The former lagoon area, which was the focus of the OU1 action under CERCLA, supports unrestricted use.

Ground water monitoring data from the past five years have shown slight exceedances of the vinyl chloride cleanup goal. Because ground water vinyl chloride concentrations are very close to the cleanup goal and in order to eliminate duplicative and unnecessary monitoring and oversight requirements, EPA will monitor ground water concentrations during the upcoming five-year period and if vinyl chloride concentrations decrease to below the cleanup goal for one year, EPA will discontinue conducting Five-Year Reviews. If this does not occur, the next policy FYR will be due no later than March 2016.

Regardless, Davie Landfill will continue to be subject to the RCRA requirements, including ground water monitoring, as discussed in the post-closure monitoring permit issued to Broward County by FDEP found in Appendix F.

Appendix A: List of Documents Reviewed

Administrative Order by Consent for Remedial Investigation/Feasibility Study: Davie Landfill. Docket No. 91-42-C. March 3, 1992.

Annual Summary Status Report for Davie Landfill (2004-2005). Davie, FL. November 17, 2005.

Completion Report. Davie Landfill Superfund Site. Davie, FL. December 30, 2003.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Information System (CERCUS) Site Information accessed from website http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0400897. May 2010-December 2010.

Consent Decree: Davie Landfill. October 10, 1996.

EPA Record of Decision: Davie Landfill. EPA ID: FLD980602288. OU 01. Davie, FL. September 30, 1985.

EPA Record of Decision: Davie Landfill. EPA ID: FLD980602288. OU 02. Davie, FL. August 11, 1994.

EPA Five-Year Review: Davie Landfill. EPA ID: FLD980602288. OU 01. Davie, FL. March 2, 1994.

EPA Five-Year Review: Davie Landfill. EPA ID: FLD980602288. OU 02. Davie, FL. June 16, 2000.

EPA Five-Year Review: Davie Landfill. EPA ID: FLD980602288. OU 02. Davie, FL. December 21, 2005.

EPA Notice of Intent to Delete. Federal Register. Davie Landfill Superfund Site. Davie, FL. June 22, 2006.

Broward County Landfill Facility Post-Closure Monitoring Permit and Permit Modifications. Davie Landfill. February 20, 2006 and June 7, 2006.

Preliminary Close Out Report: Davie Landfill Superfund Site. Whitehouse, FL. September 22, 1995.

Remedial Construction Report. Final. Sludge Lagoon Cleanup. Broward County Landfill Closure. Davie, Fl. December 1989.

Remedial Design Report. Draft. Sludge Lagoon Cleanup. Broward County Landfill Closure. Davie, Fl. May 1988.

Semi-Annual Monitoring Report. Broward County Sanitary (Davie) Landfill. Davie, FL. June 14, 2010.

Semi-Annual Monitoring Report. Broward County Sanitary (Davie) Landfill. Davie, FL. December 15, 2010.

Unilateral Administrative Order for Remedial Design/Remedial Action: Davie Landfill. OU 02. Docket No. 95-2-C. October 15, 1994.

Appendix B: Press Notices

U. S. Environmental Protection Agency, Region 4
Announces a Five-Year Review
for the Davie Landfill Superfund Site,
Davie, Broward County, Florida

Purpose/Objective: The U.S. Environmental Protection Agency (EPA) is conducting a Five-Year Review of the remedy for the Davie Landfill Superfund site (Site) in Davie, Florida. The purpose of the Five-Year Review is to ensure that the selected cleanup actions effectively protect human health and the environment.

Site Background: Operations at the 210-acre Site have included a municipal garbage incinerator and a sanitary landfill. Ash from the incinerator, construction debris and demolition debris were placed in the landfill. The incinerator was closed in 1975. The sanitary landfill was constructed for the disposal of municipal solid waste, construction debris, tires and other waste materials. A basin area at the landfill was also used as a sludge lagoon for the disposal of grease trap pump-out material, septic tank sludge and treated municipal sludge from 1971 until 1981. The lagoon was closed in 1981, following disposal of sludge-contaminated ground water. The sanitary landfill ceased operations in 1987. Primary contaminants found in site soils, sludge and ground water were inorganic chemicals, heavy metals and volatile organic compounds (VOCs). Vinyl chloride and antimony were the primary ground water contaminants of concern. EPA listed the site on the National Priorities List (NPL) on September 8, 1983.

Cleanup Actions: The cleanup plan for the Site under Superfund authority, addressed two operable units (OUs): OU1 (control of source contamination from the sludge lagoon) and OU2 (ground water monitoring and remediation). EPA issued the Record of Decision (ROD) for OU1 in 1985. Major remedy components included: excavation, dewatering and stabilization of sludge lagoon contents; disposal of sludge lagoon source materials in sanitary landfill cell #14; and placement of a cap over landfill cell #14. EPA issued the ROD for OU2 in 1994. Major remedy components included: natural attenuation of vinyl chloride and antimony; ground water monitoring to confirm natural attenuation; monitoring of residential wells; and public water supply connections for affected residents. Construction of major remedy components for OU1 was completed in 1989. In 2003, EPA determined that cleanup standards for ground water had been achieved. EPA deleted the Site from the Superfund NPL on August 21, 2006. Under authority of the Resource Conservation and Recovery Act (RCRA), the Florida Department of Environmental Protection (FDEP) certified closure of the landfill on February 7, 1995. Operation and Maintenance (O&M) activities of the landfill occur as required under the Post-Closure Monitoring Permit issued by FDEP on September 13, 2000.

Five-Year Review Schedule: The National Contingency Plan requires that Superfund remedial actions that result in any hazardous substances, pollutants or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure the protection of human health and the environment. The fourth of the Five-Year Reviews for this Site will be completed by December 2010.

EPA invites community participation in the Five-Year Review process: EPA is conducting this Five-Year Review to evaluate the effectiveness of the Site's remedy and to ensure that the remedy remains protective of human health and the environment. As part of the Five-Year Review process, EPA staff are available to answer any questions about the Site. Community members who have questions about the Site or the Five-Year Review process, or who would like to participate in a community interview, are asked to contact:

Bill Denman, Remedial Project Manager
Phone: 404-562-8939 / (800) 435-9234 (toll free)
E-mail: denman.bill@epa.gov

L'Tonya Spencer, Community Involvement Coordinator
Phone: 404-562-8463 / (877) 718-3752 (toll free)
E-mail: spencer.latonya@epa.gov

Mailing Address:
EPA Region 4
61 Forsyth St. S.W.
Atlanta, GA 30303-8960

Additional site information is also available at the Site's document repository, located at Broward County Public Library, 100 S. Andrews Ave. - Level 5, Fort Lauderdale, Florida and online: *http://www.epa.gov/region4/waste/npl/nplfls/davilffl.htm*.

Appendix C: Interview Forms

Interview Form
2010 Five-Year Review – Davie Landfill Site, Davie, FL

Site Name: Davie Landfill **EPA ID No.:** FLD980602288
Interviewer Name: Treat Suomi **Affiliation:** E^2 Inc.
Subject's Name: Richard K. Meyers **Affiliation:** Broward Co. Solid Waste Op.
Subject's Contact Information: 954-474-1848
Time: 12:00 PM **Date:** 06/25/2010
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Vista View Park (Davie Landfill) Park Headquarters (on-site)

Site Owner (Local Government) / PRP

1. What is your overall impression of the project?
   Absolute success. Folks couldn't have imagined it any better. Protection of human health and the environment. Tremendous success.

2. Have any problems been encountered in the last five years which required, or will require, changes to the Site's remedial design?
   No.

3. Have any problems or difficulties been encountered in the last five years which have impacted O&M?
   No. Still maintaining current systems.

4. What effect has this Site had on the surrounding community, if any, in the last five years?
   Tremendously positive effect.

5. How well do you believe the remedy currently in place is performing?
   As well as could be expected.

6. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents in the last five years?
   No.

7. Are you aware of any changes in projected land use at or near the Site?
   No.

8. Do you feel well informed about the Site's activities and progress?
   Yes.

9. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the Site? If yes, please give purpose and results.
   Yes. Semiannual monitoring of ground water and leachate. Daily monitoring of physical condition of property. Continuously pump leachate as needed and maintain those systems. Also operate in accordance with Title V permit for landfill gas.

10. Are you aware of any changes to local laws that might affect the protectiveness of the remedy in the last five years?
    No.

11. EPA is determining whether additional Five-Year Reviews for the Site are necessary. Do you have a recommendation regarding this?
    Should seriously consider discontinuing Five-Year Reviews due to the success of the remedy.

12. Do you have any additional comments, suggestions, or recommendations regarding the project?
    No.

Site Name: Davie Landfill **EPA ID No.:** FLD980602288
Interviewer Name: Eric Marsh **Affiliation:** E^2 Inc.
Subject's Name: Chris Deal **Affiliation:** Broward Co. Parks and Recreation
Subject's Contact Information: 954-357-8898
Time: 12:45 PM **Date:** 06/25/2010
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Vista View Park (Davie Landfill) Park Headquarters (on-site)

Site Owner (Local Government) / PRP

1. What is your overall impression of the project?
   Project is going very well. Do not have any concerns about this project.

2. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents in the last five years?
   I have not received any complaints from park users.

3. Do you have any additional comments, suggestions, or recommendations regarding the project?
   None.

Site Name: Davie Landfill **EPA ID No.:** FLD980602288
Interviewer Name: Eric Marsh **Affiliation:** E^2 Inc.
Subject's Name: William C. Denman **Affiliation:** EPA, Remedial Project Manager
Subject's Contact Information: 404-562-8939
Time: 12:00 pm **Date:** 06/25/2010
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Vista View Park (Davie Landfill) Park Headquarters (on-site)

RPM

1. What is your overall impression of the project?
   We're very pleased with how Broward County has progressed with cleanup and redevelopment of the site.

2. What effect has this Site had on the surrounding community, if any?
   It's been very beneficial by providing green space.

3. How well do you believe the remedy currently in place is performing?
   Very well.

4. Do you believe the monitoring data from the last five years shows the remedy's effectiveness?
   Yes.

5. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents in the last five years?
   No. And I haven't received any before.

6. Are you aware of any changes in projected land use at or near the Site?
   No.

7. Do you feel well informed about the Site's activities and progress?
   Yes.

8. Do you have any comments, suggestions, or recommendations regarding the Site's management or operation?
   None, except I feel that the Five-Year Reviews for this Site should be discontinued.

9. Do you feel that additional Five-Year Reviews are necessary for the Site?
   I feel that the Five-Year Reviews for this Site should be discontinued.

10. Do you have any additional comments, suggestions, or recommendations regarding the project?
I believe the information that is available for people to understand the Site is adequate. If people wanted to learn about it they will find the information.

Site Name: Davie Landfill **EPA ID No.: FLD980602288**
Interviewer Name: Eric Marsh **Affiliation: E^2 Inc.**
Subject's Name: Theresa Pepe **Affiliation: Hazardous Waste Cleanup Section**
Subject's Contact Information: 850-245-8927
Time: 12:15 PM **Date: 06/25/2010**
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Vista View Park (Davie Landfill) Park Headquarters (on-site)

FDEP

1. What is your overall impression of the project?
   Since my involvement in 2001 with DEP, things have gone really well out here: delistment, met ground water standards.

2. How well do you believe the remedy currently in place is performing?
   The remedy has performed they way we intended it to. We've satisfied the conditions of the ROD.

3. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents in the last five years?
   Don't think our office has gotten any complaints.

4. Has your office conducted any site-related activities or communications in the last five years? If so, please give purpose and results of these activities.
   My involvement has been reviewing the semi-annual reports that come in and the other communication was the delistment and we sent our concurrence letter with the delistment. Report results? One well slightly exceeds standards – it kind of fluctuates for vinyl chloride. It's probably just leaching out from the soils. It's something we're keeping an eye on. The well is deep and everyone is on the public water supply.

5. Are you aware of any changes to state laws in the last five years that might affect the protectiveness of the remedy?
   No. Our number changed a bit in the last Five-Year Review but don't think it affected COCs.

6. Are you aware of any changes in projected land use at the Site?
   No.

7. Do you feel well informed about the Site's activities and progress?
   Yes.

8. EPA is determining whether additional Five-Year Reviews for the Site are necessary. Do you have a recommendation regarding this?

I see where the RPM is coming from. I will want to discuss this issue internally with our attorneys. We're monitoring the landfill under RCRA so it almost seems redundant.

9. Do you have any comments, suggestions, or recommendations regarding the Site's management or operation?
   No. Under Superfund, not a whole lot to do other than to continue our ground water monitoring. The County has always been very cooperative with us and cooperating with landfill closure permit. Ask the Southeast Florida District about permit approval because they approve it.

Site Name: Davie Landfill **EPA ID No.: FLD980602288**
Interviewer Name: Eric Marsh **Affiliation: E^2 Inc.**
Subject's Name: Local resident (husband and wife) Affiliation: N/A
Subject's Contact Information: _____
Time: 11:00 AM **Date: 06/25/2010**
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Vista View Park (Davie Landfill) – park pavilion

Affected Residents

1. Are you aware of the environmental issues at the Site and what cleanup activities have occurred?
   I know it used to be a landfill and that they wanted to turn it into a park for the community.

2. What are your views about current site conditions, problems, or related concerns?
   No. We enjoy the whole park. I find garbage cans in reasonable parts of the site. I like that they did not over-process the hill – it has a walking path. Wish we could bring in our own kayak.

3. What effect has this Site had on the surrounding community, if any?
   We're concerned with the water, but we monitor testing reports. We live in one of the adjacent subdivisions (Imagination Farms) and our daughter jumps into the water there (the canals that run through the subdivision). We are generally concerned with the quality of water in the neighborhood.

4. In the last five years have there been any problems with unusual or unexpected activity at the Site, such as emergency response, vandalism, or trespassing?
   Only recently has structured access been established for the park.

5. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?
   Would like more information on general environmental protection methods/tools available from EPA (e.g., regarding recycling).

6. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?
   - *Specifically regarding park management, park management is doing a great job.*
   - *Would be nice if there was an access pass for nearby residents.*
   - *Impose heftier fines on littering.*
   - *Place more trash cans throughout park.*
   - *More encouragement of recycling.*
   - *Enable recycling of broader range of materials.*
   - *Food manufacturers should be prohibited from placing food products in #7 plastic.*

- *Inform people that they can take Styrofoam to public recycling facility.*
- *Encourage school cleanup days at park.*
- *Encourage more fishing events at park.*
- *Encourage more community ceremonies at park.*

Site Name: Davie Landfill **EPA ID No.: FLD980602288**
Interviewer Name: Eric Marsh **Affiliation: E^2 Inc.**
Subject's Name: Area resident/park user Affiliation: N/A
Subject's Contact Information: _____
Time: 11:30 AM **Date: 06/25/2010**
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Vista View Park (Davie Landfill) – aeromodeling flying field

Affected Residents

1. Are you aware of the environmental issues at the Site and what cleanup activities have occurred?
   I am aware that it was a landfill and have heard it was a Superfund site.

2. What are your views about current site conditions, problems, or related concerns?
   No concerns.

3. What effect has this Site had on the surrounding community, if any?
   Not sure. Don't live in the area surrounding the site.

4. In the last five years have there been any problems with unusual or unexpected activity at the Site, such as emergency response, vandalism, or trespassing?
   No, except there was a group of unauthorized users that started using the aeromodeling flying field at the site for non-flying activities. However, this was taken care of.

5. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?
   Yes, would like more information. Aeromodeling club that flies at the site has a website. This would be one way to communicate information.

6. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?
   Think that they take care of the park well. Just a few amenities like port-o-potties near the aeromodeling field would be nice. Weather permitting and as long as the park is not closed, we fly at the site any time of the year.

Site Name: Davie Landfill **EPA ID No.: FLD980602288**
Interviewer Name: Treat Suomi **Affiliation: E^2 Inc.**
Subject's Name: Local resident/park user **Affiliation: N/A**
Subject's Contact Information: _____
Time: 1:15 PM **Date: 06/25/2010**
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Vista View Park (Davie Landfill) – park pavilion

Affected Residents

1. Are you aware of the environmental issues at the Site and what cleanup activities have occurred?
   Yes.

2. What are your views about current site conditions, problems, or related concerns?
   Park is organized, clean and beautiful.

3. What effect has this Site had on the surrounding community, if any?
   More fun and more activities. Husband flies planes. Space for kids. Best park in Broward County. Well-maintained.

4. In the last five years have there been any problems with unusual or unexpected activity at the Site, such as emergency response, vandalism, or trespassing?
   Only moved here three years ago. No problems.

5. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?
   Office. Provides everything you need.

6. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?
   Great job.

Site Name: Davie Landfill **EPA ID No.:** FLD980602288
Interviewer Name: Eric Marsh **Affiliation:** E^2 Inc.
Subject's Name: Area resident/park user **Affiliation:** N/A
Subject's Contact Information: _____
Time: 1:15 PM **Date:** 06/25/2010
Type of Interview (Circle one): In Person Phone Mail Other_____
Location of Interview: Vista View Park (Davie Landfill) – park pavilion

Affected Residents

1. Are you aware of the environmental issues at the Site and what cleanup activities have occurred?
   Know about it a little bit. I know that it was a landfill.

2. Should EPA do more to keep involved parties and surrounding neighbors informed of activities at the Site? What methods would you recommend?
   I know who I should contact with the County.

3. Do you have any comments, suggestions, or recommendations regarding the Site's management or operations?
   It's a nice environment. I would like better hours as it is closed two days of the week. It used to be open every day. Would like fencing around pond in the southern playground area of the park. Concerned with the alligators in the pond. That's a potential safety issue.

Appendix D: Site Inspection Checklist

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site name: Davie Landfill	**Date of inspection: June 25, 2010**
Location and Region: Davie, FL/ Region 4	**EPA ID: FLD980602288**
Agency, office, or company leading the five-year review: EPA Region 4	**Weather/temperature: Sunny, clear, 90°F**

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☐ Access controls
- ☐ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other [i.e., excavation of sludge lagoon]
- ☒ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Richard K. Meyers (Name) | Expansion Project Manager, Waste and Recycling Services, Solid Waste Operations Division (Title) | 06/25/2010 (Date)
   Interviewed ☒ at site ☐ at office ☐ by phone Phone no. 954-4741848
   Problems, suggestions; ☐ Report attached See attached interview

2. **O&M staff** Name | Title | Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no.
   Problems, suggestions; ☐

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.). Fill in all that apply.

Agency U.S. Environmental Protection Agency

Contact	William C. Denman Name	Remedial Project Manager Title	06/25/2010 Date	404-562-8939 Phone No.

Problems; suggestions; ☐ Report attached See attached interview

Agency Florida Department of Environmental Protection (FDEP)

Contact	Theresa C. Pepe Name	Project Manager, Hazardous Waste Cleanup Section, Florida Department of Environmental Protection Title	06/25/2010 Date	850-245-8927 Phone No.

Problems; suggestions; ☐ Report attached _____

Agency Broward County

Co□tat	Chris Deal Name	Parks and Recreation Manager IV, Parks and Recreation Division Title	06/25/2010 Date Date	954-357-8898 Phone No.

Problems; suggestions; ☐ Report attached see Appendix C

Agency _____

Contact	_____ Name	_____ Title	_____ Dat□	_____ Phone No.

Problems; suggestions; ☐ Report attached see Appendix C

Agency _____

Contact	_____ Name	_____ Title	_____ Date	_____ Phone No.

Problems; suggestions; ☐ Report attached see Appendix C

4. **Other interviews** (optional) ☐ Report attached

_____

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply) (Documents no longer kept on site)

1.	**O&M Documents**			
	☐ O&M manual	☐ Readily available	☐ Up to date	☒ N/A
	☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A
	☐ Maintenance logs	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
2.	**Site-Specific Health and Safety Plan**	☐ Readily available	☐ Up to date	☒ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
	☐ Other permits _____	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____.			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State

☒ PRP in-house ☐ Contractor for PRP

☐ Federal Facility in-house ☐ Contractor for Federal Facility

☐ _____

2. **O&M Cost Records**

☒ Readily available ☒ Up to date

☐ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate $xxxxx for xx years ☐ Breakdown attached

Total annual cost by year for review period if available

From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	
From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	
From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	
From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	
From mm/dd/yyyy	To mm/dd/yyyy	_____	☐ Breakdown attached
Date	Date	Total cost	

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☐ Applicable ☒ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☐ N/A

Remarks:

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks:

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by):

Frequency:

Responsible party/agency:

Contact mm/dd/yyyy _____

Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks:_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☐ No vandalism evident

Remarks:

2. **Land use changes on site** ☐ N/A

Remarks: _____

3. **Land use changes off site** ☐ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. Roads damaged ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks:

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident

Arial extent _____ Depth _____

Remarks: _____

2.	**Cracks**	☐ Location shown on site map	☐ Cracking not evident
	Lengths _____	Widths _____	Depths _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☐ Erosion not evident
	Arial extent _____		Depth _____
	Remarks: _____		
4.	**Holes**	☐ Location shown on site map	☐ Holes not evident
	Arial extent _____		Depth _____
	Remarks: _____		
5.	**Vegetative Cover**	☐ Grass	☐ Cover properly established
	☐ No signs of stress	☐ Trees/Shrubs (indicate size and locations on a diagram)	
	Remarks: _____		
6.	**Alternative Cover** (armored rock, concrete, etc.)		☐ N/A
	Remarks: _____		
7.	**Bulges**	☐ Location shown on site map	☐ Bulges not evident
	Arial extent _____		Height _____
	Remarks: _____		
8.	**Wet Areas/Water Damage**	☐ Wet areas/water damage not evident	
	☐ Wet areas	☐ Location shown on site map	Arial extent _____
	☐ Ponding	☐ Location shown on site map	Arial extent _____
	☐ Seeps	☐ Location shown on site map	Arial extent _____
	☐ Soft subgrade	☐ Location shown on site map	Arial extent _____
	Remarks: _____		
9.	**Slope Instability**	☐ Slides	☐ Location shown on site map
	☐ No evidence of slope instability		
	Arial extent _____		
	Remarks: _____		
B. Benches		☐ Applicable	☐ N/A
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	**Flows Bypass Bench**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
2.	**Bench Breached**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay

Remarks: _____

C. Letdown Channels ☐ Applicable ☐ N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement

Arial extent _____ Depth _____

Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation

Material type_____ Arial extent _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion

Arial extent _____ Depth _____

Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting

Arial extent _____ Depth _____

Remarks: _____

5. **Obstructions** Type _____ ☐ No obstructions

☐ Location shown on site map Arial extent _____

Size _____

Remarks: _____

6. **Excessive Vegetative Growth** Type _____

☐ No evidence of excessive growth

☐ Vegetation in channels does not obstruct flow

☐ Location shown on site map Arial extent _____

Remarks: _____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A

Remarks:

2. **Gas Monitoring Probes**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A

Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A

Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☒ N/A

Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**

☐ Flaring ☐ Thermal destruction ☐ Collection for reuse

☐ Good condition ☐ Needs Maintenance

Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs Maintenance ☐ N/A

Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Area extent _____ Depth _____ ☐ N/A

☐ Siltation not evident

Remarks: _____

2.	**Erosion**	Area extent _____	Depth _____
	☐ Erosion not evident		
	Remarks: _____		
3.	**Outlet Works**	☐ Functioning	☐ N/A
	Remarks: _____		
4.	**Dam**	☐ Functioning	☐ N/A
	Remarks: _____		
H. Retaining Walls		☐ Applicable	☐ N/A
1.	**Deformations**	☐ Location shown on site map	☐ Deformation not evident
	Horizontal displacement _____		Vertical displacement _____
	Rotational displacement _____		
	Remarks: _____		
2.	**Degradation**	☐ Location shown on site map	☐ Degradation not evident
	Remarks: _____		
I. Perimeter Ditches/Off-Site Discharge		☐ Applicable	☐ N/A
1.	**Siltation**	☐ Location shown on site map	☐ Siltation not evident
	Area extent _____		Depth _____
	Remarks: _____		
2.	**Vegetative Growth**	☐ Location shown on site map	☐ N/A
	☐ Vegetation does not impede flow		
	Area extent _____		Type _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☐ Erosion not evident
	Area extent _____		Depth _____
	Remarks: _____		
4.	**Discharge Structure**	☐ Functioning	☐ N/A
	Remarks: _____		
VIII. VERTICAL BARRIER WALLS		☐ Applicable	☒ N/A
1.	**Settlement**	☐ Location shown on site map	☐ Settlement not evident
	Area extent _____		Depth _____
	Remarks: _____		

2. **Performance Monitoring** Type of monitoring _____

☐ Performance not monitored

Frequency _____ ☐ Evidence of breaching

Head differential _____

Remarks: _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**

☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A

Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (Check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

☐ Air stripping ☐ Carbon adsorbers

☐ Filters _____

☐ Additive (e.g., chelation agent, flocculent) _____

☐ Others _____

☐ Good condition ☐ Needs Maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of groundwater treated annually _____

☐ Quantity of surface water treated annually _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☐ Good condition ☐ Needs Maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance ☐ N/A

Remarks:

D. Monitoring Data

1. **Monitoring Data**

☐ Is routinely submitted on time ☒ Is of acceptable quality

2.	**Monitoring data suggests: (see right)**	Ground water meets cleanup standards, except for two of the 22 monitoring wells.
	☐ Groundwater plume is effectively contained	☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance ☒ N/A

Remarks:

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The OU1 source control remedy primarily included the excavation of the former sludge lagoon contents. No apparent issues with the former sludge lagoon remediation were identified. The sludge lagoon has been restored as a nature pond. Numerous aquatic and terrestrial plants were growing in or near the pond.

The OU2 ground water remedy consists primarily of monitored natural attenuation to address two ground water contaminants of concern: vinyl chloride and antimony. After seven semiannual sampling events (September 2000 through September 2003) showed concentrations of vinyl chloride and antimony to be below the established ROD performance standards, Broward County submitted a completion report to EPA Region 4 indicating that all cleanup goals required under the OU1 and OU2 RODs had been met and requesting that EPA initiate the process of delisting the Site from the NPL. On August 27, 2004, FDEP formally concurred with the deletion of the Site from the NPL.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Monitoring of the two ground water contaminants of concern (vinyl chloride and antimony) continues as part of the FDEP Post-Closure Monitoring Permit. This is the only ongoing O&M activity pertaining to the Superfund cleanup actions performed at the Site. O&M activities related to ground water monitoring appear to be adequate.

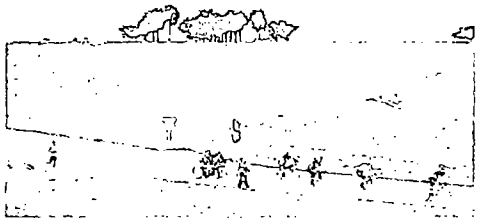
C. Early Indicators of Potential Remedy Problems

None.

D. Opportunities for Optimization

Consideration of discontinuation of Five-Year Reviews.

Appendix E: Vista View Park "EPA Region 4 Excellence in Site Reuse Award" Brochure



About Vista View Park and the Excellence in Site Reuse Award

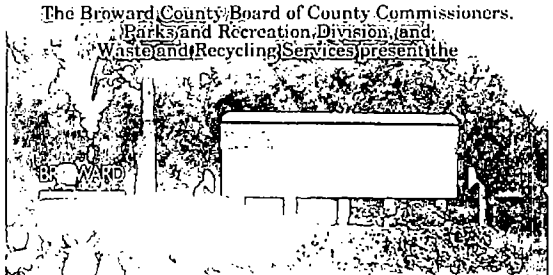
By the time Vista View opened to the public on July 12, 2003, the site had already served as the county's landfill in Davie for more than two decades, from 1964 through 1987. A cleanup overseen by the EPA led to the site's removal from the agency's National Priorities List in 2006, and since then the EPA has continued to monitor the site ensuring its environmental quality. The transformation into a park was made possible with initial funding from the Broward County Office of Integrated Waste Management, which is now known as Waste and Recycling Services. That initial funding was supplemented with money from the 2000 Safe Parks and Land Preservation Bond Referendum.

To date, the EPA's Region 4 has given Excellence in Site Reuse awards to only two sites in the State of Florida.

Since its 2003 opening, Vista View Park has offered walking and equestrian trails; hills for walking, running, and biking; two small picnic shelters (capacity 20-40); a fishing pier (catch-and-release encouraged); and lots of open space. The park's roughly 65-foot hill is among the highest elevations in Broward County, with views of Port Everglades and downtown Fort Lauderdale to the east and the Everglades to the west.

In 2002, approximately 60 additional acres were acquired with $12.8 million, half of which came from a Florida Communities Trust grant and the other half from the 2000 bond program. The park then embarked on a nearly $7.2 million expansion. Amenities included in the new expansion, which opened on November 13, 2009, are six picnic shelters (two large, two medium, and two small, with capacities of 20-40, 41-60, and 61-90, respectively); two restroom facilities; two basketball courts; another fishing pier; a paved fitness trail with 12 exercise stations; another multipurpose trail; and a park office. There are also two new playgrounds, the larger of which, Caitlyn's Corral, is accessible to children of all levels of ability; it is named for Caitlyn Munson, who died of spinal muscular atrophy in 2002 at the age of 9 months. Additional equestrian amenities include a gate off Orange Drive that provides access to trailer parking for large group trail rides and other special events; and a corral with a universal access mounting block.

The Broward County Board of County Commissioners, Parks and Recreation Division, and Waste and Recycling Services present the



EPA Region 4 "Excellence in Site Reuse" Award Ceremony for

Vista View Park

Friday, June 25, 2010
10 a.m.

4001 Southwest 142nd Avenue
Davie, Florida

Broward County Board of County Commissioners
Ken Keechl, Mayor
Sue Gunzburger, Vice-Mayor
Kristin D. Jacobs
Albert C. Jones
Ilene Lieberman
Stacy Ritter
John E. Rodstrom Jr.
Diana Wasserman-Rubin
Lois Wexler

County Administration
Bertha Henry, County Administrator
Beth Chavez, Director, Community Services Department
Thomas Hutka, Director, Public Works Department
Mary Beth Busutil, Director, Waste and Recycling Services
Ram Tewari, Director, Solid Waste Operations Division
Dan West, Director, Parks and Recreation Division

Parks and Recreation Advisory Board
Patrick Brochu
Terry Danger
Bruce Edwards
Sharon Kent
Marc Kiar
Stephen P. Lawson
Marsha Oster Levy
John (Jack) Mathison
Quentin Morgan
Stephanie Munson
Howard E. Nelson
Guy Roper
Sheila Rose
Jack Talabisco
Milette Thurston

Award Ceremony for Vista View Park

Friday, June 25, 2010, 10 a.m.

Master of Ceremonies
Dan West, Director
Parks and Recreation Division

Flag Ceremony
Davie Police Honor Guard
Town of Davie

Welcome
Lois Wexler, Commissioner, District 5
Broward County Board of County Commissioners

Remarks
Judy Paul, Mayor
Town of Davie

Ram Tewari, Director
Broward County Solid Waste Operations Division

Award Ceremony
Randall Chaffins, Superfund Deputy Director
U.S. Environmental Protection Agency, Region 4

Please join us after the ceremony for light refreshments.

Refreshments courtesy of Whole Foods Market.

Speakers subject to change.

Appendix F: FDEP Post-Closure Monitoring Permit

Department of Environmental Protection

Jeb Bush
Governor

FEB 20 2003

Southeast District
400 N. Congress Ave. Suite 200
West Palm Beach, Florida 33401
NOTICE OF PERMIT

Colleen M. Castille
Secretary

BY ELECTRONIC MAIL
Mbusutil@broward.org

Ms. Mary Beth Busutil
Broward County Waste and Recycling Services
1 North University Drive, Suite 400
Plantation, FL 33324

Broward County
SW-Broward County Sanitary Landfill
Permit Files

Dear Ms. Busutil:

Enclosed is Permit Number 0065430-001-SF to continue long term care of a closed Solid Waste Management Facility known as the Broward County Sanitary Landfill.

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is filed in accordance with sections 120.569 and 120.57 of the Florida Statutes before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Petitions by the applicant or any of the parties listed below must be filed within fourteen days of receipt of this written notice. Petitions filed by other persons must be filed within fourteen days of publication of the notice or receipt of the written notice, whichever occurs first. Under Section 120.60(3), F.A.C., however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of such notice, regardless of the date of publication. The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Department's action is based must contain the following information.

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are or will be affected by the Department's action or proposed action;

(d) A statement of all material facts disputed by petitioner or a statement that there are no disputed facts;

(e) A statement of the ultimate facts alleged, including a statement of the specific facts which the petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

"More Protection, Less Process"

Printed on recycled paper.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's *final* action may be different from the position taken by it in *this* notice. Persons whose substantial interests will be affected by any such final decision of the Department have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation under Section 120.573 of the Florida Statutes is not available for this proceeding.

Any party to this order has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this order is filed with the clerk of the Department.

Should you have any questions, please contact Mr. William Forrest of this office, telephone number (561) 681-6669.

Executed in West Palm Beach, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Kevin R. Neal 2/15/06

Kevin R. Neal Date
District Director
Southeast District Office

KRN/JRP/PAW/GA/JL/wlf

Attachments: Permit 0065430-001-SF

CERTIFICATE OF SERVICE

This is to certify that this **NOTICE OF PERMIT** and all copies were mailed before the close of business on FEB 20 2006 to the listed persons.

FILING AND ACKNOWLEDGMENT:

FILED, on this date, pursuant to §120.52 (7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

FEB 20 2006
Date

Copies furnished to:

Richard Tedder, P.E. DEP/TLH – via electronically – richard.tedder@dep.state.fl.us
Tor Bejnar, SW/TLH – via electronically – tor.bejnar@dep.state.fl.us
Richard Meyers, C.F.E.A., BCWRS/SWOD – via electronically – rmeyers@broward.org
Ram Tewari, Ph.D., P.E., Director, BCSWOD – via electronically – rtewari@broward.org\
George Aurelson, WCS/SED – via electronically – george.aurelson@dep.state.fl.us

Department of Environmental Protection

Jeb Bush
Governor

Southeast District
400 N. Congress Ave, Suite 200
West Palm Beach, Florida 33401

Colleen M. Castille
Secretary

FEB 2 0 2006

PERMITTEE:

Ms. Mary Beth Husutil, Director
Broward County Waste and Recycling Services
1 North University Drive, Suite 400
Plantation, FL 33324

WACS ID NUMBER: 00053304
PERMIT/CERTIFICATION NUMBER: 0065430-001-SF
DATE OF ISSUE: FEB 2 0 2006
EXPIRATION DATE: FEB 1 9 2011
COUNTY: Broward
LATITUDE/LONGITUDE: 26°04'47"/80°19'15"
SECTION/TOWNSHIP/RANGE: 22 & 27/50S/40E
PROJECT: Broward County Sanitary Landfill

This permit is issued under the provisions of Chapter 403, Florida Statutes, (F.S.), and Rules 62-302, 62-520, 62-522 and 62-701, Florida Administrative Code, (F.A.C.). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

TO CONTINUE POST-CLOSURE MONITORING: Of a Solid Waste Resource Recovery and Management Facility totaling 209 acres (48 acres Class I, 68 acres Class III and a former 4 acre sludge lagoon).

IN ACCORDANCE WITH: An application for permit to continue post-closure monitoring of a Solid Waste Resource Recovery and Management Facility dated July 11, 2005, with additional information received on December 09, 2005, and previous documentation submitted on June 14, 2000 and July 28, 2000, along with previous documentation submitted as part of the closure application on July 3, 1995, August 1, 1994, January 14, 1994, July 14, 1993, April 28, 1993, March 5, 1993, February 19, 1988, February 2, 1988, January 26, 1988 and December 28, 1987 respectively.

LOCATED AT: 4001 S.W. 142 Avenue, Davie, Broward County, Florida.

SUBJECT TO: General Conditions 1-15 (attached as pages 2 and 3) and Specific Conditions 1-13 (attached as pages 4 through 7).

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefor caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

   a. Having access to and copying any records that must be kept under the conditions of the permit;
   b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and
   c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in the permit, the permittee shall immediately notify and provide the Department with the following information:

   a. a description of and cause of non-compliance; and
   b. the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all

GENERAL CONDITIONS Cont'd:

damages which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-730.300, F.A.C, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

    a. Determination of Best Available Control Technology (BACT)
    b. Determination of Prevention of Significant Deterioration (PSD)
    c. Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)
    d. Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:

    a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.
    b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.
    c. Records of monitoring information shall include:
       - the date, exact place, and time of sampling or measurements;
       - the person responsible for performing the sampling or measurements
       - the date(s) analyses were performed;
       - the person responsible for performing the analyses;
       - analytical techniques or methods used; and
       - results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

Groundwater Monitoring Network Construction/Operation and Maintenance

1. The groundwater monitoring plan for this site is approved pursuant to Chapters 62-520, 62-522, 62-302 and 62-701, Florida Administrative Code (F.A.C.). The locations of the existing monitoring wells are shown on Exhibit A (attached), with the designations and types listed on Exhibit B (attached).

2. Any new or replacement monitoring wells shall be constructed in accordance with the typical monitoring well construction detail as outlined in the approved ground water monitoring plan and in accordance with Chapter 62-532, F.A.C. All new monitoring wells shall be installed by a Florida certified water well contractor. Well completion reports shall be submitted to the Department within thirty (30) days of completion of installation on DEP Form 62-522.900(3).

   The location of any new or replacement monitoring well monitoring well in degrees, minutes and seconds of latitude and longitude, the Universal Transverse Mercator (UTM), and the elevation of the top of well casing to the nearest 0.01 foot, NGVD, shall be determined by a Registered Florida Licensed Land Surveyor and Mapper within fourteen (14) days of the certified completion. A drawing illustrating the surveyed information, signed and sealed by a Registered Florida Licensed Land Surveyor and Mapper, shall be submitted to the Department within forty-five (45) days of each survey.

   Well development prior to sampling events and purge/sampling water discharges shall be followed pursuant to the Department's Standard Operating Procedures for Field Activities, DEP SOP-001/01 or any Department approved standard operating procedure which may be in force at the time. Any laboratory test required by this permit shall be performed by a laboratory that has been certified by the Department of Health (DOH) under Chapter 64E-1, F.A.C., where such certification is required by Rule 62-160.300, F.A.C. The laboratory must be certified for all specific method/analyte combinations that are used to comply with this permit.

   All monitoring wells shall be clearly identified and maintained in good condition to prevent or minimize sampling interferences, loss of well integrity or vandalism. All monitoring wells shall have well maintained concrete pads and be kept properly sealed and locked. Monitoring wells finished above grade shall be protected by bumper guards and steel risers. Monitoring wells finished at or below grade shall have traffic-bearing, steel-plate cover assemblies.

   The permittee shall maintain reasonable access to all of the monitoring well stations required by this permit. Should any of these monitoring well stations be damaged or vandalized in any manner, or destroyed, the permittee shall notify the Department immediately upon discovery. The notification shall include pertinent information as to the cause, and what steps are being taken to replace the monitoring well station and prevent the recurrence of such problems in the future.

Groundwater Testing and Reporting Requirements.

3. In the event of an emergency and/or discharge to ground water, the permittee shall notify the Department in person or by telephone within one business day of the incident and shall submit a written report describing the incident to the Department within three business days of the start of the incident. In addition, a final written report shall be sent to the Department within two (2) weeks of the incident. The final report shall contain a complete description of and discuss the cause of the emergency and/or discharge, the anticipated time that the discharge, if any, will continue, the steps that will be taken to evaluate, reduce, eliminate, and prevent recurrence of the event, and all other information deemed necessary by the Department.

4. All groundwater monitoring wells shall be sampled and analyzed semi-annually (during the months of April and October) for the parameters listed on Exhibit C. Groundwater level elevations shall be measured within 0.01 of a foot in reference to NGVD for all wells listed above, and submitted semi-annually, along with elevation references for top of casing (TOC), to the Department along with the semi-annual data. A

SPECIFIC CONDITIONS Cont'd:

groundwater potentiometric map, with contours no greater than one foot intervals, which indicates groundwater elevations and flow direction shall be submitted for each reporting period.

Pursuant to Rule 62-701.510(9)(a), F.A.C., All groundwater quality parameters and analytical results, sampling and analytical methods, method detection limits, applicable water quality standards, storet codes, WACS ID, TOC elevation, water level measurements, groundwater elevations, monitoring well identification number, monitoring well name, monitoring well type (background or compliance), sample collection date, sample analysis date, facility name and facility identification number shall be recorded and submitted certified by a professional geologist or engineer from the permittee for the landfill to the Department within the timeframes required in this Condition. A report presenting a summary or trend analysis of any water quality standards or criteria that are exceeded, including elevations of parameters above background levels, shall be included with the analytical results.

The semi-annual analytical results for ground water shall be submitted to the Department no later than the fifteenth day of the second month of each sampling event (June 15 and December 15).

All semi-annual and annual water quality analyses reports shall be submitted as described in this condition on DEP Form 62-522.900(2), Exhibit F (attached), with a summary of the information, including any anomalous data or events that may affect the data, exceedences of any Department standards or criteria, confirmation sampling events, applicable charts or graphs or any information related to the water quality monitoring well network to:

Florida Department of Environmental Protection
Southeast District Solid Waste Section
400 North Congress Ave., Suite 200
West Palm Beach, FL 33401

and to:

Florida Department of Environmental Protection
Bureau of Hazardous and Solid Waste
2600 Blair Stone Road
Tallahassee, FL 32399-2400

The Department's Southeast District office, Waste Cleanup Section, shall be notified in writing at least fourteen (14) days prior to any well installation or regular sampling event so that the Department, if desired, may observe the drilling, sampling, or collect split samples.

Compliance Monitoring Requirements

5. Pursuant to Rule 62-701.510(7), F.A.C., if indicator parameters are detected at concentrations significantly above those water quality levels established as background for the site, or which are at levels above the Department's water quality standards or criteria specified in Chapter 62-520, F.A.C., in any well, the affected well may be resampled for confirmation purposes within thirty (30) days after the permittee's receipt of the data. The Department's Waste Cleanup Section must be notified seven (7) days prior to any confirmatory resampling event at this site. Should the permittee choose not to resample, the Department will consider the water quality analysis as representative of current ground water conditions at the facility. If the data is confirmed, or the permittee chooses not to resample, the permittee shall notify the Department in writing within fourteen (14) days of this finding. The Department may require additional monitoring wells or samples to be taken if analyses indicate that groundwater contamination must be more specifically defined in extent or concentration.

SPECIFIC CONDITIONS Cont'd:

Zone of Discharge

6. The zone of discharge for this site shall be in accordance with the requirements of Chapter 62-522, F.A.C., and extend horizontally as shown on Exhibit A and extend vertically to the first continuous confining layer.

Surface Water Monitoring Requirements

7. The surface water sampling point as designated in Exhibit A and described in this condition will be sampled during periods of stormwater discharge for the parameters listed in Exhibit D, and submitted concurrently with the ground water monitoring reports.

   Pursuant to Rule 62-701.510(4)(c), F.A.C., each surface water monitoring location shall be marked and its position shall be determined by a registered Florida Licensed Land Surveyor and Mapper in degrees, minutes, and seconds of latitude and longitude and Universal Transverse Mercator coordinates within sixty (60) days of permit issuance. This information shall be submitted to the Department within forty-five (45) days of the survey.

   If any surface water analytical results exceed the Department's water quality standard in Chapter 62-302, F.A.C., a confirmatory sample shall be taken within fourteen (14) days of the permittee's receipt of the data if stormwater is still being discharged. The Department's Southeast District Waste Cleanup section must be notified seven days prior to any surface water resampling event. Should the permittee chose not to resample, the Department will consider the water quality analysis as representative of current surface water conditions at the facility. If the data is confirmed, or the permittee chooses not to resample, the permittee shall notify the Department in writing within fourteen (14) days of this finding.

Leachate Monitoring Requirements

8. Leachate samples will be collected annually at the Leachate Pump Station (Leachate Main Sump) and analyzed for the parameters listed in Exhibit E. The sampling and analysis reports shall be submitted concurrently with the ground water and surface water analyses reports.

   Pursuant to Rule 62-701.510(6)(b), F.A.C., if the results of leachate analysis indicate a contaminant listed in Title 40, Code of Federal Regulations (CFR), Part 261.24 exceeds the regulatory level, the permittee shall initiate a monthly sampling and analysis program. If the exceedance is observed in any three consecutive months, the permittee shall, within ninety (90) days, initiate a program to identify the source and reduce the contaminant level to below the regulatory level. If no listed contaminant exceeds the regulatory level in any three consecutive months, the permittee shall return to normal sampling pursuant to this condition.

Quality Assurance and Quality Control Requirements

9. All sampling and analysis activities shall be performed by organizations that have Comprehensive Quality Assurance Plans approved in accordance with Rule 62-160.300(8), F.A.C. All field activities including on-site tests and sample collections, whether performed by a laboratory or another organization, must follow all applicable procedures described in DEP-SOP-001/01. Alternate field procedures and laboratory methods may be used if they have been approved according to the requirements of Rules 62-160.220 and 62-160.330, F.A.C.

10. Stormwater shall meet the water quality standards as established in Chapter 62-302, F.A.C. at the point of discharge from the stormwater management system into waters of the State.

SPECIFIC CONDITIONS Cont'd:

Post Closure

11. The permittee shall maintain, in good standing, the financial assurance mechanisms established to meet the requirements of Rule 62-701.630(2)(d), F.A.C. Compliance is maintained by submitting all required updated documentation within the time frames specified in Rule 62-701.630, F.A.C. All submittals in response to this specific condition shall be submitted to:

    Florida Department of Environmental Protection
    Financial Coordinator-Solid Waste Section
    Twin Towers Office Building
    2600 Blair Stone Road, MS 4565
    Tallahassee, FL 32399-2400

12. The Department retains regulatory control over any activities which may affect the integrity of the environmental protection measures such as landfill cover, drainage, liners, monitoring system or leachate and stormwater controls. Consultation with the Department is required prior to conducting activities at the closed landfill.

13. At least sixty (60) days prior to the expiration of this permit, the permittee shall make an application to the Department for renewal of the permit in a manner prescribed by the Department in order to assure conformance with all applicable Department rules.

Issued this 15th day of February, 2006

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Kevin R. Neal

Kevin R. Neal
District Director
Southeast District

JRP/PAW/GA/JL/wff

Department of Environmental Protection

Jeb Bush
Governor

JUN - 7 2006

Southeast District
400 N. Congress Ave. Suite 200
West Palm Beach, Florida 33401

Colleen M. Castille
Secretary

BY ELECTRONIC MAIL
Mbusutil@broward.org

Ms. Mary Beth Busutil, Director
Broward County Waste and Recycling Services
1 North University Drive, Suite 400
Plantation, FL 33324

Broward County
SW – Broward County Sanitary Landfill
Permit Files

Dear Ms. Busutil:

RE: Modification of Permit Number 0065430-001-SF
File Number: 0065430-002-SF
Permit Expiration: 02/07/2015
Facility Name: Broward County Sanitary Landfill (BCSL)
WACS Number 00053304

The Department is in receipt of your request to modify the referenced permit. The permit has been modified as given below.

SPECIFIC CONDITION # 4 has been changed:

FROM:

4. All groundwater monitoring wells shall be sampled and analyzed semi-annually (during the months of April and October) for the parameters listed on Exhibit C. Groundwater level elevations shall be measured within 0.01 of a foot in reference to NGVD for all wells listed above, and submitted semi-annually, along with elevation references for top of casing (TOC), to the Department along with the semi-annual data. A groundwater potentiometric map, with contours no greater than one foot intervals, which indicates groundwater elevations and flow direction shall be submitted for each reporting period.

   Pursuant to Rule 62-701.510(9)(a), F.A.C., all groundwater quality parameters and analytical results, sampling and analytical methods, method detection limits, applicable water quality standards, storet codes, WACS ID, TOC elevation, water level measurements, groundwater elevations, monitoring well identification number, monitoring well name, monitoring well type (background or compliance), sample collection date, sample analysis date, facility name and facility identification number shall be recorded and submitted certified by a professional geologist or engineer from the permittee for the landfill to the Department within the timeframes required in this Condition. A report presenting a summary or trend analysis of any water quality standards or criteria that are exceeded, including elevations of parameters above background levels, shall be included with the analytical results.

   The semi-annual analytical results for ground water shall be submitted to the Department no later than the fifteenth day of the second month of each sampling event (June 15 and December 15).

   All semi-annual and annual water quality analyses reports shall be submitted as described in this condition on DEP Form 62-522.900(2), Exhibit F (attached), with a summary of the information, including any anomalous data or events that may affect the data, exceedences of any Department standards or criteria,

confirmation sampling events, applicable charts or graphs or any information related to the water quality monitoring well network to:

Florida Department of Environmental Protection
Southeast District Solid Waste Section
400 North Congress Ave., Suite 200
West Palm Beach, FL 33401

and to:

Florida Department of Environmental Protection
Bureau of Hazardous and Solid Waste
2600 Blair Stone Road
Tallahassee, FL 32399-2400

The Department's Southeast District office, Waste Cleanup Section, shall be notified in writing at least fourteen (14) days prior to any well installation or regular sampling event so that the Department, if desired, may observe the drilling, sampling, or collect split samples.

TO:

4. All groundwater monitoring wells shall be sampled and analyzed semi-annually (during the months of April and October) for the parameters listed on Exhibit C. Groundwater level elevations shall be measured within 0.01 of a foot in reference to NGVD for all wells listed above, and submitted semi-annually, along with elevation references for top of casing (TOC), to the Department along with the semi-annual data. A groundwater potentiometric map, with contours no greater than one foot intervals, which indicates groundwater elevations and flow direction shall be submitted for each reporting period.

   Pursuant to Rule 62-701.510(9)(a), F.A.C., all groundwater quality parameters and analytical results, sampling and analytical methods, method detection limits, applicable water quality standards, storet codes, WACS ID, TOC elevation, water level measurements, groundwater elevations, monitoring well identification number, monitoring well name, monitoring well type (background or compliance), sample collection date, sample analysis date, facility name and facility identification number shall be recorded and submitted certified by a professional geologist or engineer from the permittee for the landfill to the Department within the timeframes required in this Condition. A report presenting a summary or trend analysis of any water quality standards or criteria that are exceeded, including elevations of parameters above background levels, shall be included with the analytical results.

   The semi-annual analytical results for ground water shall be submitted to the Department no later than the fifteenth day of the second month of each sampling event (June 15 and December 15).

   All analyses reports shall be submitted as described in this condition on DEP Form 62-522.900(2), Exhibit F (attached), to:

   Florida Department of Environmental Protection
   Southeast District Solid Waste Section
   400 North Congress Ave., Suite 200
   West Palm Beach, FL 33401

   and to:

   Florida Department of Environmental Protection
   Bureau of Hazardous and Solid Waste
   2600 Blair Stone Road
   Tallahassee, FL 32399-2400

The Department's Southeast District office, Waste Cleanup Section, shall be notified in writing at least fourteen (14) days prior to any well installation or regular sampling event so that the Department, if desired, may observe the drilling, sampling, or collect split samples.

SPECIFIC CONDITION # 7 has been changed

FROM:

7. The surface water sampling point as designated in Exhibit A and described in this condition will be sampled during periods of stormwater discharge for the parameters listed in Exhibit D, and submitted concurrently with the ground water monitoring reports.

   Pursuant to Rule 62-701.510(4)(c), F.A.C., each surface water monitoring location shall be marked and its position shall be determined by a registered Florida Licensed Land Surveyor and Mapper in degrees, minutes, and seconds of latitude and longitude and Universal Transverse Mercator coordinates within sixty (60) days of permit issuance. This information shall be submitted to the Department within forty-five (45) days of the survey.

   If any surface water analytical results exceed the Department's water quality standard in Chapter 62-302, F.A.C., a confirmatory sample shall be taken within fourteen (14) days of the permittee's receipt of the data if stormwater is still being discharged. The Department's Southeast District Waste Cleanup section must be notified seven days prior to any surface water resampling event. Should the permittee chose not to resample, the Department will consider the water quality analysis as representative of current surface water conditions at the facility. If the data is confirmed, or the permittee chooses not to resample, the permittee shall notify the Department in writing within fourteen (14) days of this finding.

TO:

7. The surface water sampling point as designated in Exhibit A and described in this condition will be sampled during periods of stormwater discharge for the parameters listed in Exhibit D, and submitted concurrently with the ground water monitoring reports.

   Pursuant to Rule 62-701.510(4)(c), F.A.C., each new surface water monitoring location shall be marked and its position shall be determined by a registered Florida Licensed Land Surveyor and Mapper in degrees, minutes, and seconds of latitude and longitude and Universal Transverse Mercator coordinates. This information shall be submitted to the Department within forty-five (45) days of the survey.

   If any surface water analytical results exceed the Department's water quality standard in Chapter 62-302, F.A.C., a confirmatory sample shall be taken within fourteen (14) days of the permittee's receipt of the data if stormwater is still being discharged. The Department's Southeast District Waste Cleanup section must be notified seven days prior to any surface water resampling event. Should the permittee chose not to resample, the Department will consider the water quality analysis as representative of current surface water conditions at the facility. If the data is confirmed, or the permittee chooses not to resample, the permittee shall notify the Department in writing within fourteen (14) days of this finding.

EXHIBIT C. has been changed.

REMOVE:

The parameter Total Coliform, Storet # 031501, from Exhibit C (Revised Exhibit C. attached).

REMOVE:

Specific Condition number 13.

This letter must be attached to the original permit and becomes a part of the permit.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Petitions by the applicant or any of the parties listed below must be filed within fourteen days of receipt of this written notice. Petitions filed by other persons must be filed within fourteen days of publication of the notice or receipt of the written notice, whichever occurs first. Under Section 120.60(3), F.A.C., however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of such notice, *regardless of the date of publication.* The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Department's action is based must contain the following information.

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are or will be affected by the Department's action or proposed action;

(d) A statement of all material facts disputed by petitioner or a statement that there are no disputed facts;

(e) A statement of the ultimate facts alleged, including a statement of the specific facts which the petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation under Section 120.573 of the Florida Statutes is not available for this proceeding.

Any party to this order has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district

court of appeal. The notice of appeal must be filed within thirty days after this order is filed with the clerk of the Department.

Should you have any questions please contact Mr. William Forrest of this office, telephone number (561) 681-6669.

Executed in West Palm Beach, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Kevin R. Neal 6/5/06
Kevin R. Neal Date
District Director
Southeast District

KRN/JWL/PAW/GA/JPL/wtf

CERTIFICATE OF SERVICE

This is to certify that this **NOTICE OF PERMIT MODIFICATION** and all copies were mailed before the close of business on JUN - 7 2006 to the listed persons.

FILING AND ACKNOWLEDGMENT: FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk JUN - 7 2006
Date

Copies furnished electronically to:

Richard Tedder, P. E., SW/TLH– richard.tedder@dep.state.fl.us
George Aurelson, SED/WCS – george.aurelson@dep.state.fl.us
Richard K. Meyers, C.F.E.A., S.W.O.D. - rmeyers@broward.org
Ram N. Tewari, Ph.D., P.E., Director, S.W.O.D. – rtewari@broward.org
Jason Rakofsky, SED/SW – jason.rakofsky@dep.state.fl.us
Paul Wierzbicki, SED/WCS - paul.wierzbicki@dep.state.fl.us

Appendix G: 2005-2010 Ground Water Concentrations for Antimony and Vinyl Chloride

Antimony Trend: Sept. 2005 – Oct. 2010 (Cleanup Goal: 6 µg/L)

GWMW	2005	2006		2007		2008		2009		2010	
	Sept.	May	Sept.	April	Sept.	April	Sept.	April	Sept.	April	Oct.
3-38	<5.0	<0.03	<0.03	<3.0	<2.0	1.10 IV	<2.0	<2	<3.8	<3.8	<4.1
3-58	<5.0	<0.03	<0.03	<3.0	<2.0	0.900 IV	<2.0	<2	<3.8	<3.8	<4.1
3-110	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1[a]
7-37	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1
7-59	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1
7-84	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	4.46 I
8-35	<5.0	<0.03	<0.03	<3.0	<2.0	0.800 IV	<2.0	<2	<3.8	<3.8	<4.1
8-59	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1
8-72	<5.0	<0.03	<0.03	<3.0	<2.0	1.40 IV	<2.0	<2	<3.8	<3.8	<4.1
9-36	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1
9-59	<5.0	<0.03	<0.03	<3.0	<2.0	2.20 V	<2.0	<2	<3.8	<3.8	<4.1
9-93	<5.0	<0.03	<0.03	<3.0	<2.0	1.40 IV	<2.0	<2	<3.8	<3.8	<4.1
11-31	<5.0	<0.03	<0.03	<3.0	<2.0	1.30 IV	<2.0	<2	<3.8	<3.8	<4.1
11-57	<5.0	<0.03	<0.03	<3.0	<2.0	0.800 IV	<2.0	<2	<3.8	<3.8	<4.1
11-75	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1
11-100	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1
21-35	<5.0	<0.03	<0.03	<3.0	<2.0	1.50 IV	<2.0	<2	<3.8	<3.8	<4.1
21-62	<5.0	<0.03	<0.03	<3.0	<2.0	1.20 IV	<2.0	<2	<3.8	<3.8	<4.1
21-85	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1
22-34	<5.0	<0.03	<0.03	<3.0	<2.0	0.900 IV	<2.0	<2	<3.8	<3.8	<4.1
22-60	<5.0	<0.03	<0.03	<3.0	<2.0	<2	<2.0	<2	<3.8	<3.8	<4.1
22-91	<5.0	<0.03	<0.03	<3.0	<2.0	1.30 IV	<2.0	<2	<3.8	<3.8	<4.1

Source: Broward County, Solid Waste Operations Division

-All units in µg/L

- The "I" qualifier means the results were between the laboratory MDL & PQL.

- The "V" qualifier means the analyte was detected in both the sample and the associated method blank.

[a]The sample duplicate results measured 4.93 µg/L.

Vinyl Chloride Trend: Sept. 2005 – Oct. 2010 (Cleanup Goal: 1 µg/L)

GWMW	2005	2006		2007		2008		2009		2010	
	Sept.	May	Sept.	April	Sept.	April	Sept.	April	Sept.	April	Oct.
3-38	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
3-58	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
3-110	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
7-37	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
7-59	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
7-84	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
8-35	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
8-59	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
8-72	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
9-36	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
9-59	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
9-93	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
11-31	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
11-57	<1	<0.31	<0.31	<0.34	<0.34	1.02	<1	1.29	0.600	0.730	0.739 I
11-75	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
11-100	1.70	2.10	2.10	2.17	1.90	1.50	0.96	2.10	<0.414	1.280	0.604 I
21-35	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
21-62	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
21-85	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
22-34	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
22-60	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192
22-91	<1	<0.31	<0.31	<0.34	<0.34	<1	<1	<1	<0.414	<0.414	<0.192

Source: Broward County, Solid Waste Operations Division
-All units in µg/L
- The "I" qualifier means the results were between the laboratory MDL & PQL.

Appendix H: Site Inspection Photographs

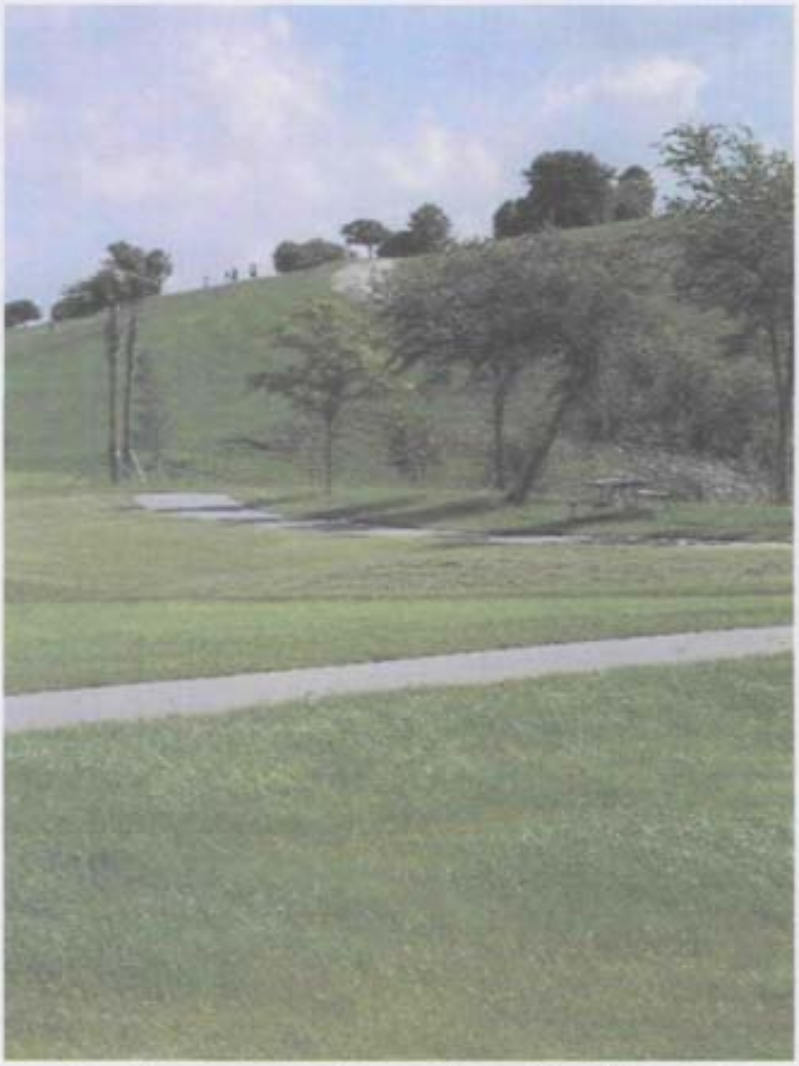
Near entrance to Site on eastern side.

Entrance to the Site located on eastern side.

Nature pond (former sludge lagoon) located near the center of the Site. The south mound (trash landfill) is located in the background toward the west.

Walking trail located just east of the nature pond (former sludge lagoon).

Sitting area near the nature pond (former sludge lagoon) looking west. Lake #1 (borrow pit #1) and Lake #2 (borrow pit #2) are immediately to the north-northeast of the nature pond.

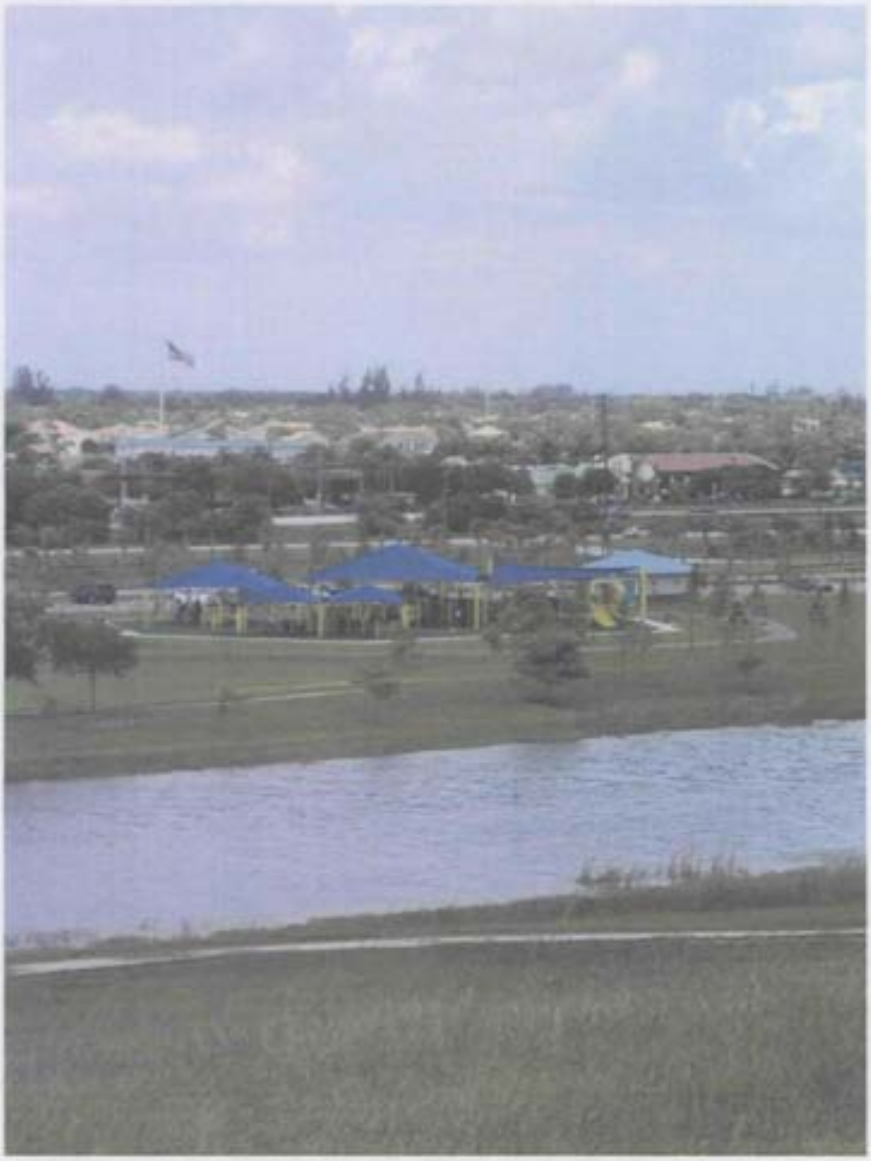


Looking west toward the southern edge of the south mound (trash landfill). Walking trails and a picnic bench are in the foreground. The southern edge of the nature pond (former sludge) lagoon is shown in the middle ground.

Looking north toward the north mound (sanitary landfill) from atop the south mound (trash landfill). Gas extraction wells are located at various points across the north mound.

Flying field used by local model airplane club on the top of the south mound (trash landfill) looking north.

Residential subdivision located just west of the Site. View from the top of the south mound (trash landfill).



Recently constructed playground adjacent to the site boundary. View from the top of the south mound (trash landfill) looking south-southwest. Lake #3 (borrow pit #3) is located just within the southern site boundary.

Playground equipment as part of newly constructed playground within Vista View Park. The playground is located adjacent to the Site, just south of the southern site boundary.

Recently constructed basketball courts as part of Vista View Park looking south-southeast from the north mound (trash landfill). The courts are located just beyond the south-southeast boundary of the site.